How To

Examine Your Animal?

Pet-Animal -Equine –Ruminants

By

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Contents

Introduction

Dearest my veterinary medical stuedent and veterinarian, this is the first edition of our book " How To Examine Your Animal?" in which we try highlighing on the most important points during examiantion of your animal either in your clinic or under field conditions, so its consists of four chapters about the general vertirany examination and how to examine your pet-animal, equine, large ruminants and small ruminants, as well as its supported by more than 200 figures, photos, tables or diagrams to explain the aim of the needed items, as well as about 100 medical expressions in the form of veterinary medical glossary in the begening of the book commonly used in the veterinary field, hooping that we can reach by this book to help you to be abale to make good examination of your animal as weel as good diagnosis of suspected diseases and consequantely good prognosis and treatment which will reflected on the genreal health condition of your animal.

The approach to a health problem is based on training, experience and probability. Some health problems are common, others are rare. Some problems occur more commonly in young animals, other problems are more common in aged ones. Some problems are common in one part of the country but rarely occur in other locations.

It is very important in studying the veterinary medicine to know how you deal with your animal and how you can examine it without causing any problem for you or for the animal , so it is very important to know how you can restrain the animal as very

animal need certain methods for restraining either for medication or for examination.

Studying the normal behavior and habitats of each animal also is important because diseases means any deviation from the normal physiological pattern of the animal, so regarding and paying attention of the normal physiological pattern of each parameters and system is very important to have the ability of reorganization of any diseases.

Paying attention for each clinical sings and making of differential diagnosis and complete history of each case as well as using the modern methods of diagnosis is very important for confirmation of your final diagnosis, as well as thoroughly examination of the animal is very important as there are some disease of certain system but this disease may has another signs or complications on another system, so thoroughly examination of the animal with stress in your examination of the suspected diseased system is very important to avoid the misdiagnosis and bad treatment.

Field experiences play an important role as it help the veterinarian for making differentiation between diseases which have similar signs or complications as well as early and correct

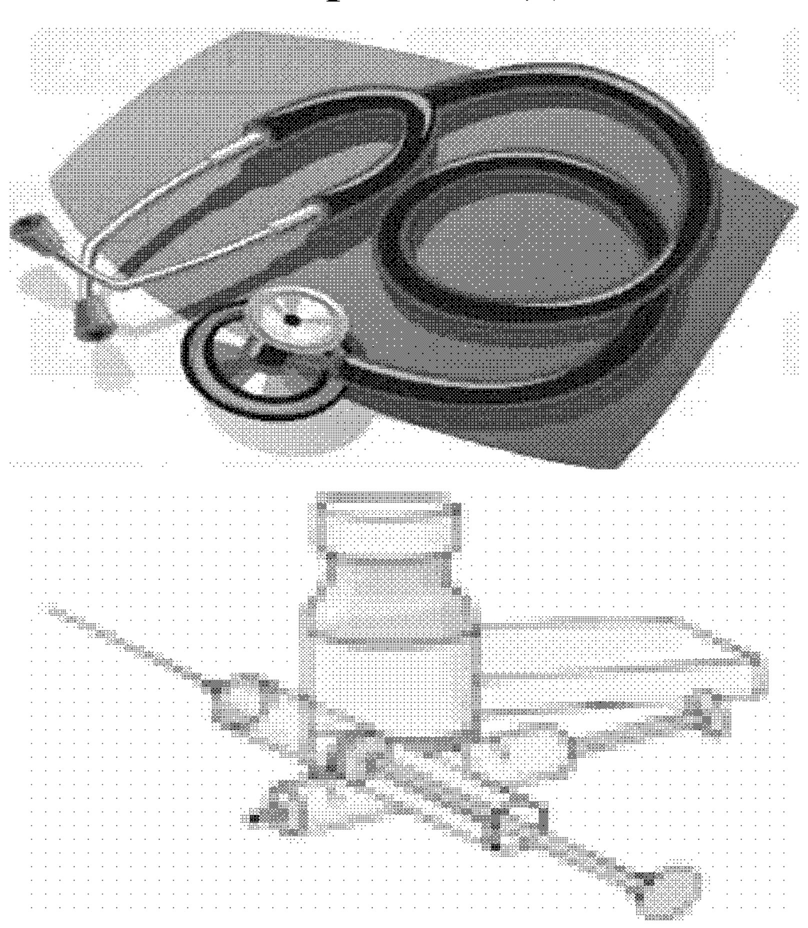
diagnosis are better than rapid incorrect diagnosis which may lead to bad prognosis and coast a lot of money.

Restraining or casting of the animal for proper clinical examination and to avoid any harmful injuries either for the animal or for the veterinarian or assistants so how to restrain each animal it is very important to deal with each animal without causing any problem and make full clinical examination and medication also, so in each chapter we put some figures of the most common methods of restraining of each animal.

There are some medical expressions are very important to mention them before discussion of the general veterinary examination or examination of each system of each animal as what we mean by diseases? Types of etiology of diseases and another important expressions used in the veterinary field, some of this medical expressions will be discussed in the following part.

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Chapter No. (1)



General Veterinary Examination

Veterinary Medical Glossary

APETITE: The desire for feed and drink.

ACUTE DISEASES: A disease which quickly develops and from which the animal can die or recover.

ABOMASUM:-The fourth or true digestive part of a ruminant's stomach that contains gastric juices and enzymes that begin the breakdown of complex materials.

ACIDOSIS (grain overload):--When the pH of the rumen is abnormally low (<5.5). Signs of disease may include diarrhoea, with or without blood

ACUTE:-Any process occurring over a short period of time

ANEMIA:-The lack of red blood cells in the body. Anaemia can be the result of loss, destruction, and/or decreased production of red blood cells.

ANOREXIA:-A loss of appetite or desire to eat.

ARTERY:-Blood vessel that carry the blood from the heart to the organ and used for taking of pulse.

AVERAGE DAILY GAIN(ADG):-The amount of weight gained each day.

$$ADG = \frac{\text{Present weight - Previous weight}}{\text{Number of days between weights.}}$$

BALANCE:-A smooth and harmonious blending of body parts.

BALANCED RATION:-A ration contains nutrients in the correct proportion to nourish the animal properly for 24 hours.

BODY TEMPERATURE:-Heat of body measured in degrees; usually measured to obtain a quick evaluation of an animal's health.

BRISKET: - Breast muscles of the cow, buffalo, horse.

BROKEN MOUTH:-An animal is described as "broken mouthed" when some of the incisor teeth have fallen out or have become badly worn and irregular, usually the result of old age or hard grazing.

CALCIUM to PHOSPHORUS RATIO:-Relative amounts of calcium and phosphorus in the total ration, usually recommended to be at least 2:1.

CALCULI:-Describing a variety of stones that are found in the urinary system. These include kidney and bladder stones.

COLIC:-General abdominal pain. The source of the pain can be the liver, kidneys, intestines, stomach, ……..etc.

COAT: The hair, wool or fur of an animal.

COLOSTRUM:-First fluid secreted by the udder for a few days pre- and postpartum. High in antibodies, this milk protects newborn animals against disease.

CONCENTRATE:-A feed that is high in nutrients and low in fibrous material. Examples are corn, oats and soybean meal.

CONGENITAL: - Present at birth. Birth defects are usually referred to as congenital.

CONSTIPATION:-A condition in which the contents of the large intestines (bowels) are discharged at abnormally long intervals or with difficulty.

CONDITION:-The degree of fatness in breeding animals.

DAM:-The maternal parent or mother.

DISCHARGES: - An out flow of fluid or material, usually from the eye or ear or nostrils.

DIARRHOEA: - Watery faeces which are frequently passed.

DEFORMITY: - Part of the body which is badly shaped.

DIET:-The required amount and proportion of nutrients for an animal. A diet is a formulated set of nutrients that is based on the animal's requirements.

DIGESTION:-The changes in a feed that must take place before the nutrients can be absorbed and used by the animal.

EXPIRATION: - The act of breathing out.

ETIOLOGY:- It is the science which deal with the causes of the diseases

E. COLI SCOURS:- Disease that effects lambs in first 5-7 days of life causing watery, yellow diarrhoea, dehydration and rapid death.

EDEMA:- Fluid swelling that can accumulate anywhere in the body.

EMACIATION:-Loss of flesh results in extreme leanness or emaciation.

ENDOCARDITIS:-When the endocardium or inner surface of the heart becomes inflamed or irritated.

ENERGY:-The amount of calories available in a feed.

ENTERITIS:-An inflammation of the intestinal tract.

ENVIRONMENT:-All of the conditions an animal is subjected to, i.e. climate, housing, pastures, range, disease, parasites, management, etc.

ERUCTATION (belch):-The usual passage of gas out of the rumen.

EWE:-Female sheep of any age.

EXUDATE:-A thick fluid that is produced in response to a disease or infection.

FAECES: - Waste material left after digestion.

FEVER: - A very high body temperature caused by an infection

FLEECE:-The wool from one sheep. The coat of the sheep usually removed as one unit. The term "fleece" correctly applies only to wool fabrics, although there are so-called fleeces of other fibers.

FLOCK:-A group of sheep that are managed together. Sheep have inborn ability or desire to flock, or gather, together. This is also known as gregariousness.

FORAGE:-A feed that is high in fibrous material and somewhat low in energy. Examples are hay, pasture and silage.

GAIT(movement):- The way in which a horse (or other animal) moves.

GESTATION:-The time from the date the female is mated with the male until the offspring are born.

HAERT RATE:- The number of times the heart beats in one minute.

HERIDITARY:- Characteristics passed from parents to young.

HORMONE:-The secretion of a ductless gland that activates some other organ.

HYPOCALCEMIA:-Low levels of calcium in the blood.

HYPOMAGNSEMIA:-Low levels of magnesium in the blood.

HYPOTHERMIA:-Inability to keep warm often caused by cold or wet weather.

ICTERUS:-A yellow discoloration of the gums and white of the eye that is often associated with liver problems and some types of anaemia.

IDIOPATHIC:-When the exact cause of the problem or disease is not known.

INSPIRATION: - Act of breathing in.

INJECTION: - To put a fluid into the body using a needle and syringe.

INTRAMMAMARY:- Into the udder.

INTRAMUSCLE (IM) INJECTIONS: - The route of administration of an injection, this is accomplished by inserting the needle straight into the skin and deep into the muscle.

INTRANASAL (IN):-The spraying or administering of a solution into the nostrils.

INTRAVENOUS (IV) INJECTIONS:-Are sometimes used. Some medications are labelled for intravenous injection only, because they are strong irritants to muscle and tissue and can cause damage. The IV route of administration provides a rapid means of getting the medication into the system of a sick animal as well as eliminating the chance of tissue damage. IV injections are given directly into the bloodstream.

INTERNAL PARASITES:-Parasites located in the stomach and intestines of sheep.

JAUNDICE:-Yellow coloration of the skin, mucous membranes, and secretions.

LACTATION:-The period of milk secretion.

LAMB:-A young sheep still with its mother or up to about 5 months of age. Also a young sheep of either sex under 1 year of age.

LESION OR DISEASES: Injury to or abnormal tissue or loss of function of a body part. Cut skin, TB tubercles in the lungs and mastitis are all lesions

LIVER FLUKES:-Small leaf-shaped organisms that rolls up like a scroll in the bile ducts or liver tissue.

LYMPH GLAND OR NODE: - Small gland which helps to protect the body against disease.

MASTITIS:-Inflammation of the udder.

MUZZLE:- Sensitive area around the nose and mouth.

NEPHRITIS:-Inflammation of the kidney(s).

OMASUM:-The third part of a ruminant stomach located between the reticulum and the abomasum.

OVINE:-Pertaining to sheep.

PARASITE:-An organism which lives on or in another living organism (host) at the expense of the latter.

PARTURITION:-The process of giving birth.

PERITONITIS:-Inflammation of the internal surface of the abdomen. This condition is often the result of infections and certain diseases.

PROGNOSIS :-The chances of an animal have a normal quality of life following a disease or problem. This is reported using the words poor, fair, good, or excellent.

QUARANTINE:-To confine and keep an animal from contacting other animals or people. This is essential to stop the spread of infectious diseases that are potentially transmissible to other animals or humans.

RATION:-Total feed given an animal during a 24 hour period.

RECTAL PROLAPSE:-When a portion of the rectum protrudes past the anus.

RESPIRATION RATE:-The number of breaths an animal makes per minute.

RUMEN: - The large first compartment of a ruminant's stomach_contains microbial population that is capable of breaking down forages and roughages.

RUMINANT:-Animals that have a four-compartment stomach (rumen or paunch, reticulum, omasum, and abomasum or true stomach).

RUMINATION:-the process of regurgitating food to be rechewed.

SCOURS:-Diarrhoea

SEPTICAEMIA:-Serious infection in which the bloodstream is invaded by large numbers of causal bacteria which multiply there.

SMOOTH-MOUTH:-An animal that has lost all of its permanent incisors, usually 7 or more years of age.

SNEEZING: - Forced expiration to expel air from the nose suddenly and with no control.

SUBCUTANEOUS (S/C) INJECTIONS:-Are accomplished by inserting the needle just under the skin and not into the muscle. This is important because S/C injectables are designed for a slower rate of absorption or are highly irritating to muscle tissue

STESTHOSCOPE:-The instrument used to listen to the heart and other sounds in the body.

TAPEWORMS:-Long, ribbon-like segmented flatworms that can inhabit the gastro-intestinal tract of animals.

THERMOMETER: Glass instrument used to measure temperature

TOXAEMIA:-Generalized poisoning, due to soluble (usually bacterial) toxins entering bloodstream.

TROCAR:-An instrument used in an emergency to relieve the gas from a distended rumen.

URINARY CALCULI:-Metabolic disease of male lambs characterized by the formation of stones within the urinary tract. It is caused primarily by an imbalance of dietary calcium and phosphorus.

VEIN:-Blood vessels in the body that carry blood towards the heart.

VITAL SIGNS: - Physical signs that indicate an individual is alive, such as heart beat, breathing rate, and temperature.

*Table Show General Function Of Each System

System of the Body	Organs in the Body	Job or function
Musculo-skeletal	Muscle (meat) bones	Support and move the body
Digestive	Stomach, liver, intestine, pancreas	Digest and absorb feed
Circulatory	Heart, blood vessels	The brood carries substances around the body
Respiratory	Muzzle, windpipe, lungs	Breathing
Urinary	Kidneys, bladder	Get rid of poisons and waste (urine)
Nervous	Brain, nerves spinal cord	Pass messages around the body & control the body
Sensory	Eyes, ears, nose skin	Sense and detect things outside the body
Reproductive	Testes, penis ovaries, uterus, vagina, vulva, udder	To produce and feed young
Lympho-reticular system	Lymph nodes, spleen	Protect against infectious diseases & produce blood

Causes Of The Diseases

A-Internal causes:- As hormonal diseases as dwarfism or diabetes mellitus - hereditary diseases as hemophilia

B-External causes: may be

1-Mechanical: as trauma, sprain or traumatic gastritis

2-Physical; as so cold or so hot diet or exposure to sun for long period

3-Chemical: as exposure to strong acid or alkaline or liking of irritant topical applications as iodine or organophosphorous poisoning

4-Biological: as bacterial, viral. or parasitic infestation

5-Metabolic: as hypocalcaemia, ketosis

6-Nutrtional: as vitamin A or copper deficiency

Symptoms:- Symptoms means that the evidences of the diseases which my be :-

1-Subjective symptoms : These are the symptoms which are confined to the animal and not available to the veterinarian as colic or pain

2-Objective ; these are the symptoms which are seen by the necked eye as vomiting, or diarrhea

3-Genral symptoms: These are the symptoms which are detected by the veterinarian only as fever, or hypothermia

4-Specific: these are the symptoms which are specific for some diseases as scooting on the ground in case of anal saculitis.

Diagnosis:- Diagnosis means that the art of recognization of the disease not only that but also differentiation from other diseases

-The main step of dealing with the disease is that diagnosis because of treatment, preventive measures and control mainly depend on accurate diagnosis so, incomplete or false diagnosis leads to false treatment and bad prognosis.

****Types of diagnosis**:*

***1-Etiological diagnosis**:* When the main cause of the disease is known as tetanus

***2-Symptomatic diagnosis**:* Depend on the symptoms that appeared on the animal and the causes are known as jaundice

3-Therapeutic diagnosis: Means that giving of certain drugs (depend on your geuse0 if cure is occurred so your diagnosis is right

4-Laboratory diagnosis: As microbiological tests, parasitological, or serological tests

5-Specific diagnosis: Means specific test used in certain disease as tuberculin test in diagnosis of TB. or malin test in diagnosis of Glanders

***6-Surgical diagnosi*s:-As** X-ray, laparotomy or exploratory puncture

7-Preventive diagnosis; this type of diagnosis can be applied in the large scale of animal group as the normal level of calcium in blood of cattle e 8-12mg% and when this level become lower than 7mg% this indication to occurrence of hypocalcaemia, so we can avoid this condition by adding of calcium salts to the ration to keep the calcium level within normal limit

8-Copmuter diagnosis; the computer is supplied with data obtained from the owner and it is possible for the answer considered as diagnosis.

Plane of Treatment:- -The plain of treatment depend to great extend upon the nature of the disease either infectious, nutritional or metabolic or ……….etc. and on the healthy condition of the animal

-The plain of treatment including:-

1-General care of the animal: -The diseased animal should be placed in good ventilated area away from other healthy animal especially if infectious disease is suspected.

-Plenty water and food should be offered to the diseased animal

-The diseases animal should be placed in area where the possibility of injury is minimum.

-Correction of the bad manegmental and hygienic conditions

2-**Specific treatment;** - Means that the drug of choice of certain diseases as calcium therapy in case of hypocalcaemia

3-**Supportive treatment**: As fluid therapy to treat dehydration or multivitamins in weak animal.

4-**Treatment of complications**; As in case of dehydration which associated as a complication of sever diarrhea.

GENERAL VATERINARY CLINICAL DIAGNOSIS

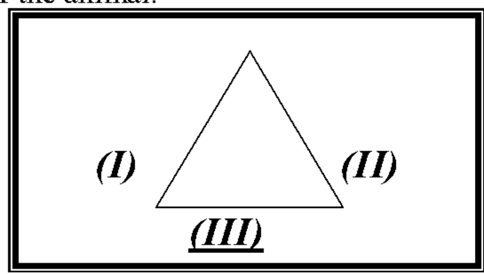
-Clinical diagnosis means that making of complete examination of the animal and its surrounding.

-Clinical diagnosis includes main three items which are

(I)-Taking of complete history or anamnesis.

(II)-Examination of the environment.

(III)-Examination of the animal.



(I)-TAKING OF HISTORY "ANAMNESIS"

-Taking of history is very important because incomplete history leads to misdiagnosis and poor prognosis

-The veterinary clinician should has an experience about the animal diseases and field expression

-Taking of history includes:-

1-Present or immediate history : this includes

-Animal description

-Asking about defecation, urination, gait and growth rate of the animal

-Asking about the first sign of the disease

-Asking about how long the animal has been ill?

-Morbidity rate: That determined by the proportion of the animals that are clinically affected compared to the total animals that exposed to the same risk

-Mortality rate: Determined by the proportion of the dead animals compared by the total numbers of animals that exposed to the same risk .

2-Past history: includes

-Asking about the previous illness and treatment

-Transportation of the animal.

-Introduction of any new animals to the herd.

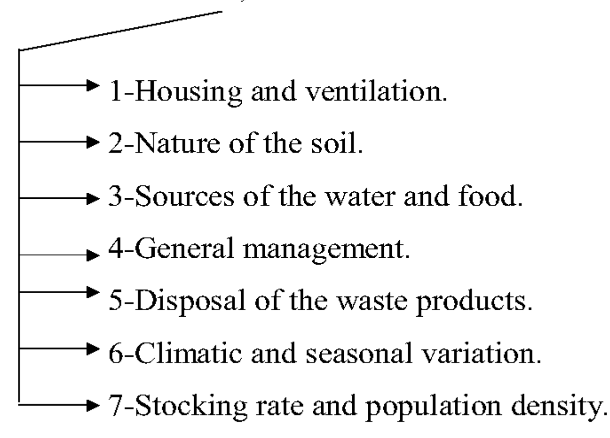
-Are there any culling and the causes of culling?

-Asking about the postmortem lesion of the diseases animal

(II)-EXAMINATION OF THE ENVIRONMENT

- Clinical examination of the animal should be accompained by a consideration of it's surrounding environment

-Examination of the environment includes;



(III)-CLINICAL EXAMINATION OF THE ANIMAL

(I)-Genera Inspection

(II)-Taking of -Body temperature -Pulse -Respiration

(III)-Examination of -Mucus membranes -Lymph nodes

(IV)-Physical examination by –Palpation -Percussion- Auscultation

(V)-Systemic examination of each system

-Clinical examination of the animal can be confirmed by special methods of examination of the animal as X-ray, endoscopies or microbiological tests …………etc.

INSPECTION OF THE ANIMAL

Definition: Inspection of the animal means that observation of the animal prior to manipulation or physical examination for investigate the normal and abnormal conditions of the following points:-

1-Behaviour and general appearance of the animal

2-Physical condition

3-Posture and gait of the animal

4-Tremors and convulsion

5-Demeanour

6-Act of defecation, urination and respiration

1-Behaviour and general appearance of the animal:-

*Abnormal behavior may be indicated to some diseased conditions as scooting on the ground in dog in case of anal saculitis or looking for cold place as in case of gastritis or vigorous liking of the skin as in case of mange or urticaria

2-Physical Condition Of The Animal:-

- Physical condition of the animal may be

A-Good physical condition which means that all bony prominent are covered with flesh, this condition is obtained in case of good management and feeding system (balanced diet quantitatively and qualitatively).

***B-Poor or emaciated or leathergy* or bad** physical condition which means that the boney prominent not coverd with flesh as in case of

Dehydration – parasitism either internal or external parasites

DM. TB. Persistent diarrhea

C-Fat or obese:- *animal* this condition present when the obesity hinder the animal for moving due to excessive deposition of fat ,also obesity may act as predisposing factor to many diseases as DM.

3-Posture And Gait :-

-Abnormal posture and gait of the animal help in diagnosis of many diseases as :-

-Abnormal curvature of the long bones as in case of rickets in young animal or osteomalecia in adult one.

-Abduction of the hind leg with arched back indicated to abdominal pain.

-Praying position as in case of enteritis.

-Squatting position in male dog as in case of cystitis.

-Stumbling in gait as in case of arthritis or laminitis.

4-Demeanour Of The Animal:-

- Demeanour means that it is the respons of the animal againest external stimuli and such respons may be normal ,decraaesed or increased as the following

A-*Normal demeanor* means normal response of the animal against external stimuli in the form of rising of the head moving away from the source of stimuli and looking toward the source of the stimuli

B-*Decreased demeanor* may be in three forms

-Dull form: - Delayed response against external stimuli as in case of fever or colic in pet animals

-Dummy form: Advanced degree of sluggish response against external stimuli but there is response against painful stimuli as in case of liver fibrosis, lead poisoning, or encephalomyelitis

-Coma: Similar to dummy but there is no response against painful stimuli as in case of ketoacidotic stage of DM (diabetic coma).

C-*Increased demeanor*: - In which the response of the animal against external stimuli is more than normal degree and it may be in the following forms:

-**Mildly anxious or apprehensive**:- As in case of defect in the vision

-**Restlessness: -** There are movements of restlessness as lying down and getting up frequently, rolling or groaning as in case of gastritis or enteritis or early stage of rabies

-Mania or frenzy: - Which characterized by aggressive abnormal behavior as vigorous liking of the skin or uncontrolled movement as in case of rabies (late stage), or tetany or heavy infestation by external parasites.

5-Tremors and convulsions :-

I-Tremors: - It is persisting and repetitive twitching of the skeletal muscles in strong or slight form

Types :

1-**Localized** means that the tremors include group of muscles only as in case of fear or overloading on group of muscle as in case of transportation.

2-**Generalized means** that the tremors include all the body as in case of fever or hypothermia.

II- Convulsions:- it is forced or violent muscular contraction and such contraction may be continuous or interspersed with period of relaxation .

Types:

1-**Tonic or tetanic**: - In which the convulsion present in continuous manner as in case of tetanus or strychnine poisoning

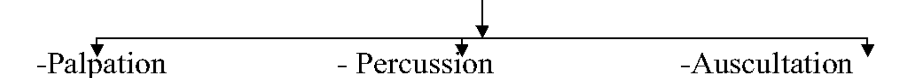
2-Clonic: In which the convulsion present in episodes (i.e. Interspersed with period of relaxation) as in case of hypocalcaemia.

3-Epileptic: In which the convulsion initially mild with tendency to increased in frequency and severity, usually in dog as in case of rabies or epilepsy.

6-Act of defecation, urination and respiration:-

Will be discussed latter with each system

PHYSICLA EXAMINATION



-Palpation - Percussion -Auscultation

A-Palpation:-

Definition:- Palpation means that manipulation or handling of different compartments of the animal

Methods: - Direct method by using of the fingers of the hand or palm of the hand

-Indirect method as using of probe as in case of examination of deep wound

Aims of palpation :-

1- Detection of the body temperature.

2- Detection of the consistency of the palpated organ.

3- Detection of the size of the examined part.

4- Examination of deep sited structures.

5- Detection of the existence of pain in the examined organ.

Types of palpation.-

1-Resileint palpation:-

*In which the palpated organ retained to its normal position or size just after the digital pressure was ceased.

2- Doughy palpation:-

*In which the palpated organ leaves a pit after pressure as in case of edema or abscess

3- Emphysematous palpation:-

In which there is crepitating sound during palpation due to presence of gases in the palpated organ as in case of palpation of s/c. emphysema

4-Flactuating palpation:-

In which there are waves like movement during palpation as in case of palpation of the intestine.

5-Hard palpation:

As in case of palpation of bone

6-Firm palpation:-

*As in case of palpation of lymph nodes or liver.

B-Percussion

Definition: - Percussion means that striking on the body compartment to detect it's healthy condition especially deeper lying parts

Methods:-By using of plexmeter (plate of wood) and plexor (hammer) -Finger-finger percussion

Types:-

1- Resonant percussion:-

It is the sound which present when percussion was done over gas containing organ as normal percussion of the lung

2- Dull percussion:-

It is the sound which present when percussion was done over gas free organ as normal percussion of the heart (area of the cardiac dullness)

3-Tmpanic percussion:

It is the sound which present when percussion was done over hollow part containing gases and such gases either under pressure as in case of

percussion of tympany or the gases surrounded by solid structure as normal percussion of the Para nasal sinuses (frontal or maxillary sinuses).

Precautions during percussion:-

1-Plexmater or finger should be firmly pressed on the skin to avoid presence of any air spaces between the skin and plexmater

2-Plexor or hammer should be suitable with the size of the animal.

3-The strike should be originated from the wrist not from the elbow or shoulder.

4-The strike should be met with the size of the animal.

5-Plexmeter should be perpendicular with the plexor.

6-Whole the examined area should be percussed in systemic manner.

C-Auscultation

Definition:- Auscultation means that listening of certain sounds from certain organs by using of certain set (medical stethoscope).

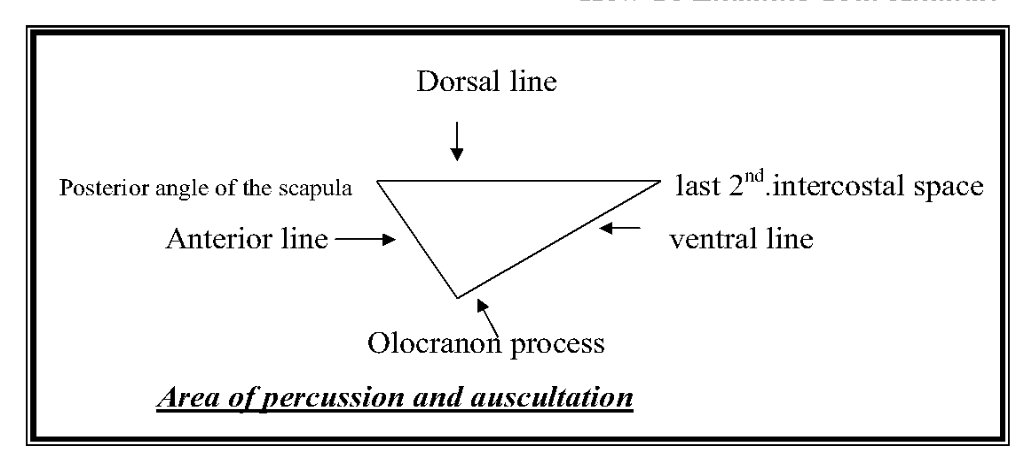
Methods:-

-Direct method by using of ears but it is not preferred in the veterinary medicine to avoid zoonotic diseases or soiling of the skin by feces or presence of external parasites.

-Indirect method by using of medical stethoscope.

Areas of percussion and auscultation of the chest in pet animal:-

It is a triangular or cone shaped are bounded by three lines



Area of percussion and auscultation

-Dorsal line:- Which extended from the posterior angle of the scapula to the last second inter costal space

-Anterior line: - Which extended from the posterior angle of the scapula to the olocranon process of the ulna on the right side and over this level by about 2-3 fingers on the left side (area of cardiac dullness).

-Ventral line: - Which extended from last second intercostals space to the olocranon process and passing in the middle of 7th.rib (in dog and cat).

Precautions during auscultation:-

1-The chest piece of the stethoscope should be firmly contact with the skin

2- Avoid friction of the chest piece with the skin.

3- Auscultator area should be examined in systemic manner

4-Making bilateral auscultation of the lung

5- The chest piece should be moved completely to avoid frictional sound.

General precautions during dealing with animals:-

*Many diseases can be transferred from animal to human through blood, saliva and urine, so paying attention during dealing with either diseased or healthy animal should be high, some precautions include:

1-Have your animals should be regularly tested and vaccinated.

2-Familiarise yourself with the symptoms of animal diseases.

3-Treat any sign of illness promptly.

4-Practise good personal hygiene.

5-Wash your hands after handling animals.

6-Cover all cuts and open wounds before coming in contact with animals.

7-If you come in contact with animal blood, urine or saliva, wash well with soap, water and antiseptic.

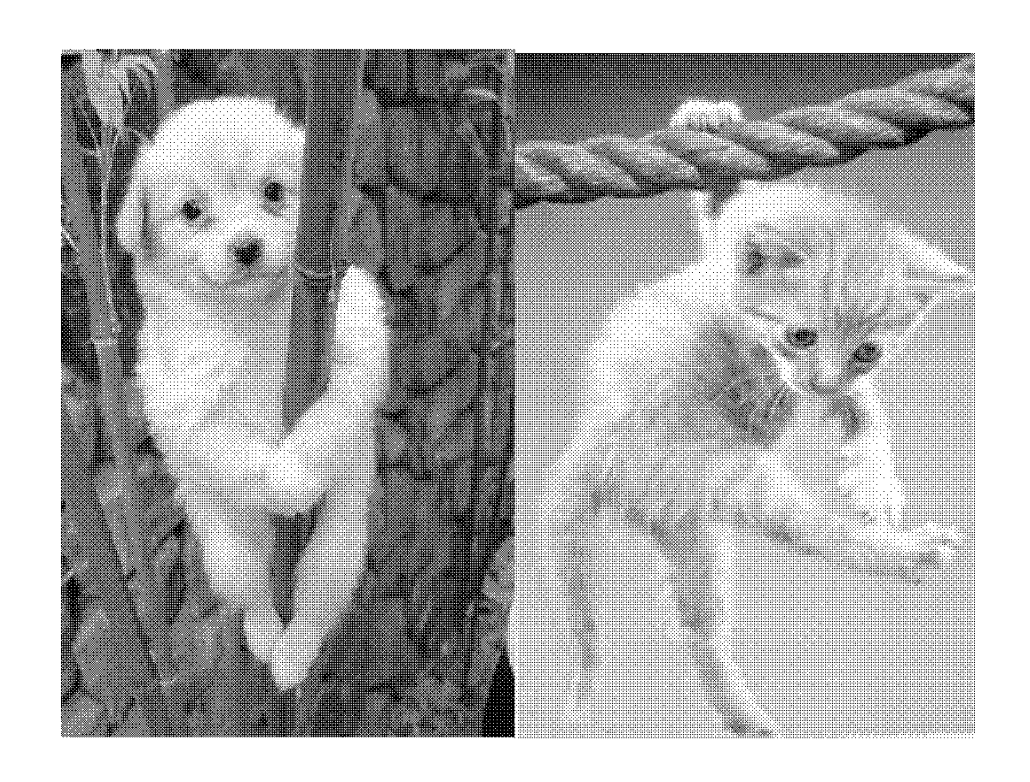
8-Don't feed offal to dogs.

9-Be familiar with the most common zoonotic diseases transferred from each animal.

10-Be familiar with the normal behaviour with each animal to avoid disturbance of your animal.

Chapter No. (2)

How To Examine



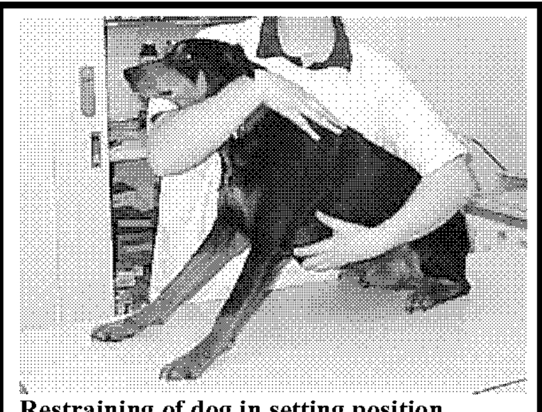
Your Pet-Animal?

Restraining And Medications Of Dog And Cats

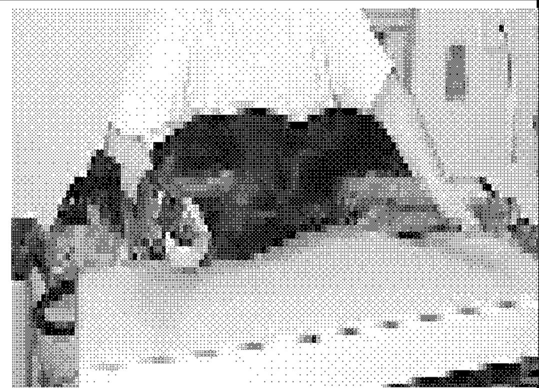
*The use of proper restraint and handling techniques reduces stress to animals and also to the researcher. Handling stress represents an experimental variable and should be minimized whenever possible. Animals can inflict serious injuries to humans and to themselves as a result of improper handling.

*In each chapter we will show some of the most common method of retraining of each animal as well as some method of medication.

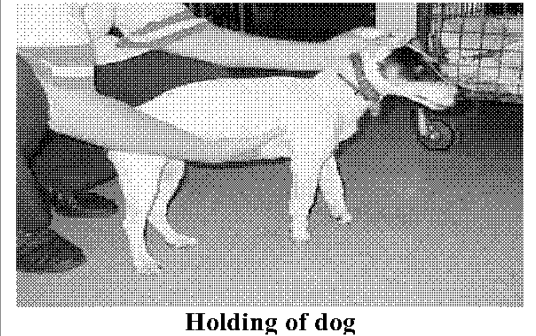
*The figures show the most common methods of handling of dog and cat.



Restraining of dog in setting position



Handling of dog in lateral recumbency

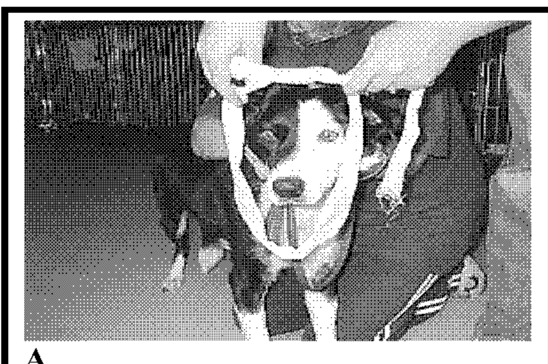


Holding of dog

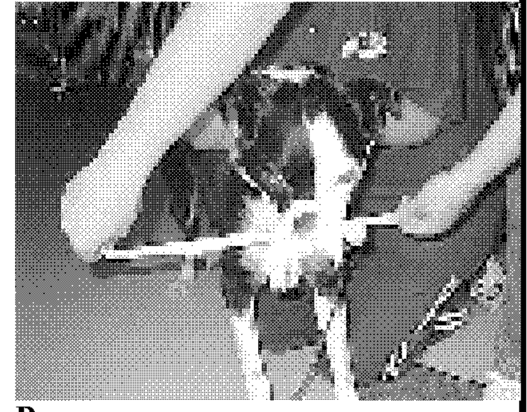
*Steps of application of dog muzzle for restraining the dog for making safe examination of the dog (A, B, C)

*Its important to not approach to the dog without its owner to avoid injuries for you or for the dog.

*Handling of cat from the scruff.



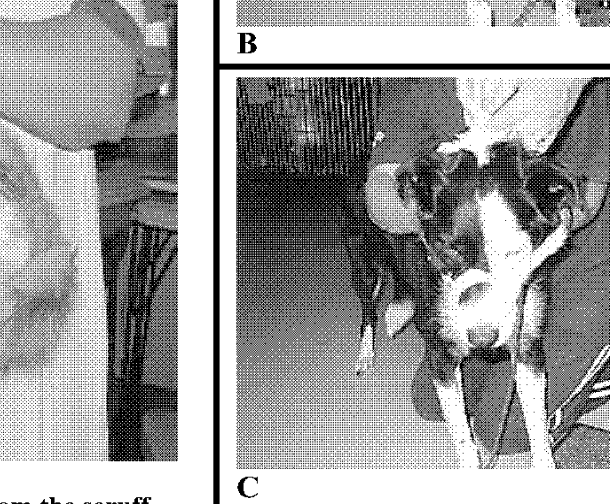
A



B



Handling of cat from the scruff



C

***Oral medication of dog**

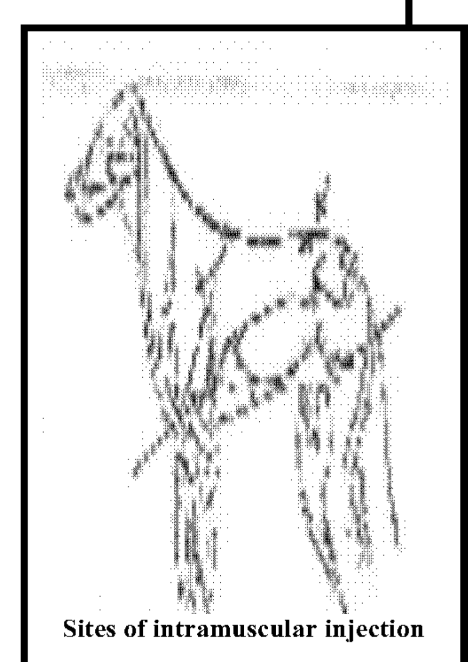
(Don't tilt the head back ward to avoid entrance the fluid in the respiratory tract.

***Intramuscular injection:-**

Usually in the muscle group as in the thigh or in the shoulders.



Oral medication in dog



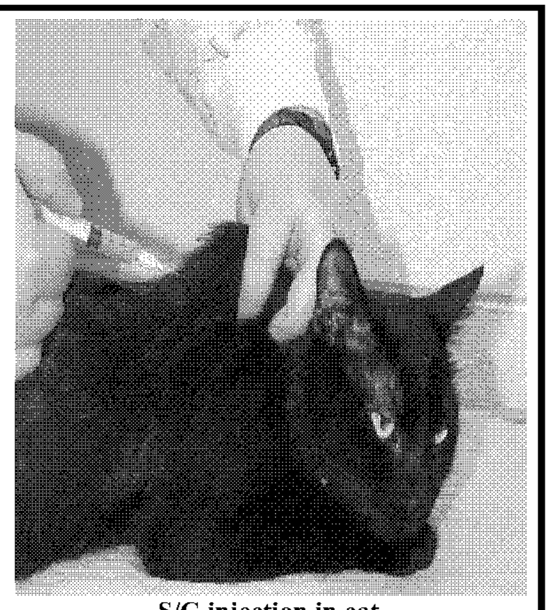
Sites of intramuscular injection



Intramuscular injection in dog

<u>*Subcutaneous injection:-</u>

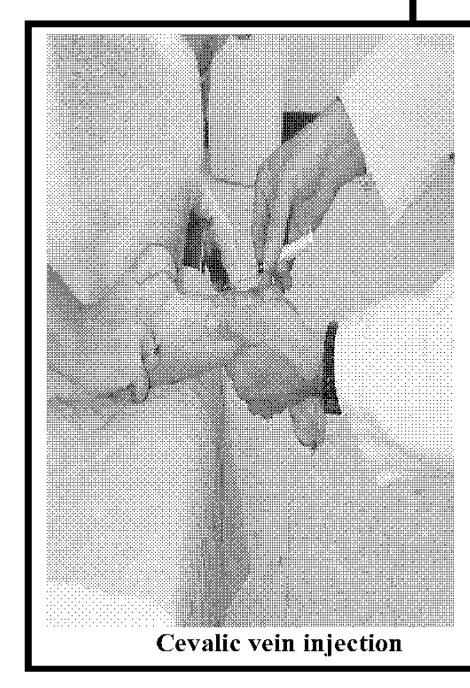
Usually in the area of skin fold as in the scruff or in the shoulder or in the neck area.



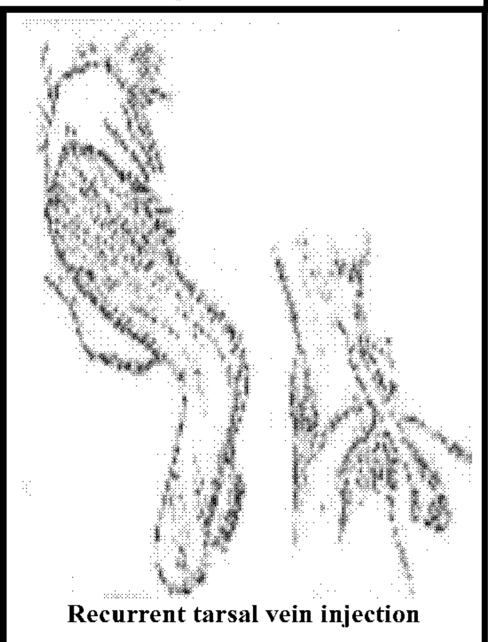
S/C injection in cat

<u>*Intravenous injection :-</u>

Usually in the cephalic vein, lateral recurrent tarsal vein or in the jugular vein.



Cevalic vein injection



Recurrent tarsal vein injection

BODY TEMPERATURE IN PETS

Studying of the body temperature includes :-

1-Physiological aspect on the body temperature

2-Internal body temperature

3-Clinical significance of taking of body temperature

(1)-Physiological Aspect on The Body Temperature

1-Higher animals are homeothermal i.e maintain their body temperature constant indepently of the temperature of the surrounding environment but in very narrow limite by thermoregulatory center which present in the anterior hypothalamic area of the brain.

2-Maximum efficiency of thermoregulation occurred by combined action between thermoreceptores which present on the skin and certain mucous membranes with the thermodetectores that present on the hypothalamic part of the brain.

3- Thermoregulatory mechanism mainly neural and hormonal.

4 -Liver, heart and muscles participate in the heat production in the body

5-Heat loss occurred by vaporization, respiration, sweating or radiation

(II)-Internal Body Temperature

1-The internal body temperature that detected clinically is not indicator to the total heat production in the body, but it is indicator to the steady stage of the thermal balance in the body between the heat loss and heat production in the body.

2-The temperature of the surface of the body differs from that of the internal organs.

3-The body temperature in the animal taken rectally by using of the clinical blunt bulb thermometer as the following:-

*Holding the thermometer from the glass rode.

*Shaking the thermometer to drop the level of the mercury to lower point than that needed to be detected say 35 C°.

*Lubricate the blunt end of the thermometer to facilitate the introduction of it in the rectum by using of any lubricant.

*Insert the thermometer in the rectum with rotation and make it to be contacted with the rectal mucosa for about two minutes.

*Reading the given temperature.

*If the animal defecates during taking of the temperature we should take it again after five minutes because the feces have temperature higher than that of the rectum and it may give misdiagnosis.

*After reading the temperature the thermometer should be cleaned well.

*If taking of the temperature from the rectum is not available (as in case of nervous animal or rectal abscess …..etc.) We can take it from the vagina (rectal temperature =vaginal temperature – 0.5 C) or from the axila (rectal temperature = axillary temperature +1 C).

4-Normal range of the body temperature in pet animal:-

- Large breed dog------------------ 37.5-38.6 C°.

-Small breed dog------------------ 38.6-39.2 C°.

- Cat--------------------------------- 37.5-39.2 C°.

<u>Physiological Factors Affecting In the Body Temperature:-</u>

<u>Age</u>: Young animal has higher temperature than old one.

Breed: Small breed animals have higher temperature than that of large breeds.

Sex: Females have temperature higher than that of males.

Daytime: The body temperature in the morning is lower than that in the midday.

Physiological process: As lactating or pregnant animals have temperature higher than that of non one.

NB. Body temperature may be increased under some normal condition up to 1.5 C°. more than that of the normal as in case of exercise, feeding or during examination of the animal specially in the excitable animal but the temperature returned to it's normal level within 20-30 minutes but if it is not returned to normal within this period this is considered as diseased condition .

(III)-Clinical Significance Of The Body Temperature

A- Hypothermia B-Hyperthermia C-Fever or pyrexia

A- Hypothermia :

* Hypothermia means that abnormal lowering of the body temperature than normal level due to shock, circulatory collapse, hypothyroidism or most common in newly born animals due to lack of colostrums or bad weather conditions, prior to death except in case of tetanus due to muscular convulsions.

B-Hyperthermia

* Hyperthermia means that abnormal elevation of the body temperature than normal level which usually due to physical factors as in case of heat stasis or sun stroke (will be discussed latter in Equine part).

C-Fever or pyrexia :-

*It is the condition in which the body temperature is higher than normal which usually due to microbial infection and it is usually accompanied with disturbances in the thermo regulating mechanism.

PATHOGENESIS OF FEVER:-

1-Infection by bacteria or viruses lead to increase the production of the pyrogen (endogenous pyrogen) from the granulocytes, macrophages and monocytes .

2- Exogenous pyrogen such as the bacterial endotoxine also stimulate the secretion of the endogenous pyrogen as well as antigen antibody complex acts as indirect mediator for leucocytes pyrogen as in case of allergic tests or after vaccination.

3-Fever has three stages as the following:-

(I)-Increment or onset stage:-

A-In this stage there is cutaneous capillaries constriction which leads to dryness and coldness of the skin in addition to:-

–Decreased respiration   -Decreased urine volume

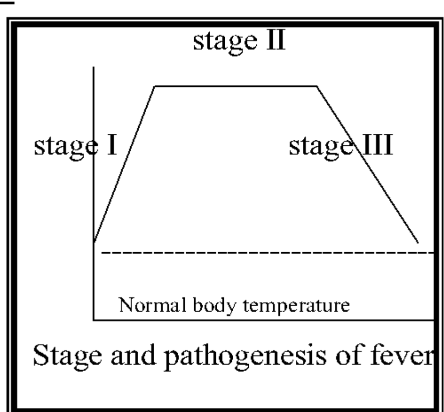
-Decreased heart rate   -Shivering of the skeletal muscles.

B-All the previous sings mainly due to the effect of the pyrogen on the hypothalamus that leading to raising of the thermostatic level of the body than normal thermostatic level, so the organs which responsible for

regulation of the body temperature (heat loss and heat production) are affected immediately by the previous changes (singes).

(II)- Fastigium (acme) or steady stage :-

A-In this stage the temperature is Constant and the demand of the heat Production is subsided while the heat Loss is increased that reflected in the Form of peripheral vasodilatation (Congested mucous membranes) and Sweating with various severity.



Stage and pathogenesis of fever

B-In this stage if the animal exposed to changes in the environmental Temperature it may lead to alteration of the body temperature.

(III)-Decrement or Fever Defervescence Stage :-

A-In this stage the effect of the pyrogen is ceased or diminished after the localization of the infective microorganism in it's predilection sit (i.e. .after the end of the stage of vireamia or bacteremia) then the stored heat is dissipated and the body temperature is fall to normal level accompanied with flaccidity in the muscles and peripheral vasodilatation (as a mechanism of heat loss).

Classifications of Fever

A- According to causes:-

1-Septic fever: - As in case of bacterial or viral infection

2-Aseptic fever:- As in case of allergic test or vaccination or in the surgical operation due to tearing of the tissues .

B-According to Degree.- **1-Low fever**: - The body temperature is increased than normal by about 1C above normal as in case of laryngitis

2-Modrate fever: - In which the body temperature is increased than normal level by about 1.7-2.2 C°. as in case of pneumonia

3-Sever fever:- In which the body temperature is increased by about 2.8-3.3 C°.as in case of sever pneumonia or peritonitis

C- According to the form of the fever as :-

1-Simple fever: - In which the temperature increased and remain elevated with variation of less than 1C for few days

2-Continious fever: - In which the temperature increased and remain elevated for long period than that of the simple one as in case of bronchitis or lobar pneumonia

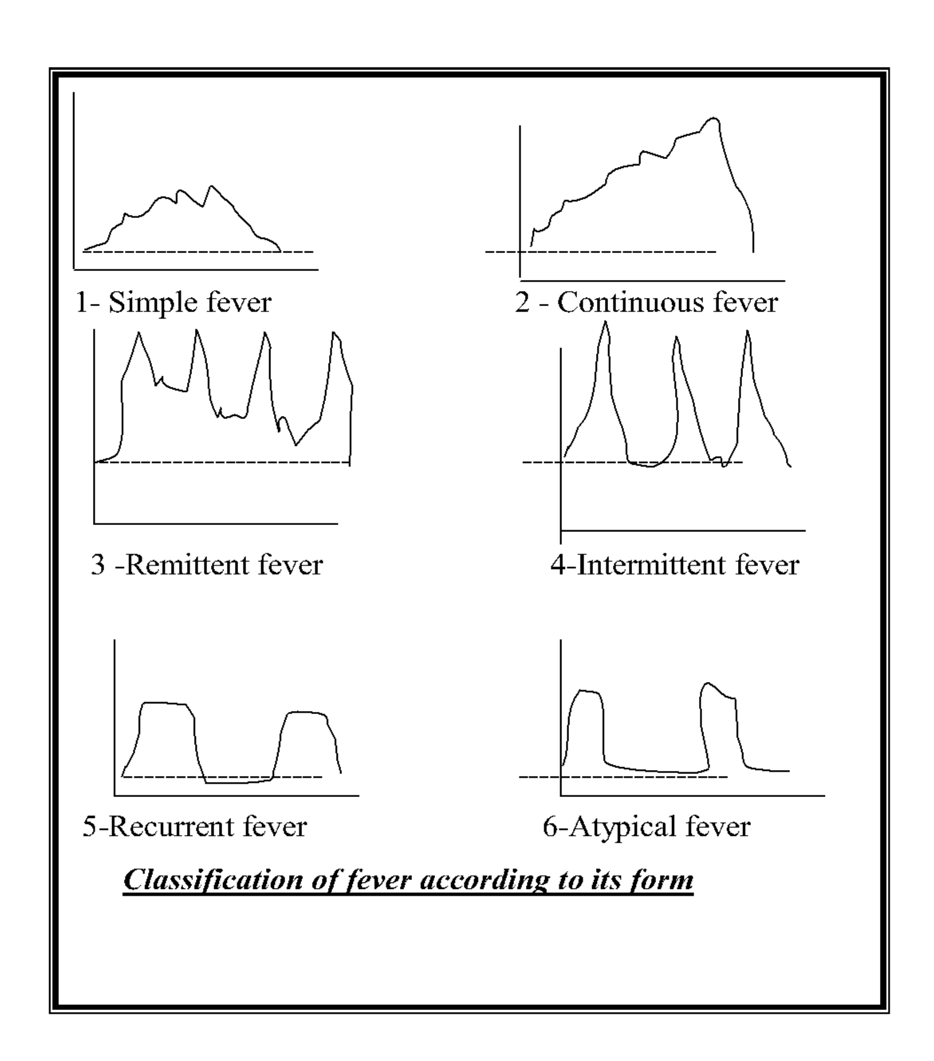
3-Rimettent fever: In which the temperature increased and falls by more than 1C.at short and irregular intervals but it is remained higher than normal as in case of chronic suppurative pneumonia

4-Intermittent fever: - In which the temperature increased for 2-3 days and it is interspersed with non febrile intervals that forming an irregular manner of the fever as in case of blood parasites

5-Recurrent fever:- In which the temperature increased for period and followed by an equal period of non febrile condition as in case of bronchopneumonia.

6-Atypical or biphasic fever :- in which the temperature rises for certain period and it is followed by unequal period of non febrile condition as in case of canine distemper

NB.Induced fever as the aseptic fever as in allergic test or after vaccination.



Classification of fever according to its form

Pathological factors affecting in body temperature:-

Factors increasing C°.	**Factors decreasing** C°.
- Acute pneumonia	-Shock or hemorrhage
-Pleurisy	-Dehydration
-Infectious diseases	-Diarrhea
-Deep abscesses	-Diabetes or jaundice
-Cystitis, metritis or bronchitis	-Anemia and prior to death
-Fracture of the bone	-Cardiac failure

Visible Mucous Membranes In Pet-Animal

-Examination of the visable mucous membranes is of great imporatant in determining of the general health condition of the animal and it is more suitable than examination of the skin due to it's thinner membrane and lack of hair

-The most important membranes are conjuncitival,oral ,nasal rectal and vaginal membrane.

-Examiantion of the mucous membrane should be done in the presence of light source as electrical torsh.

Changes in the mucous membranes may be due to :-

1-Disturbances in the circulation

2-Disturbances in the oxidation process in the lung

3-Other pathological condition as jaundice

Pointes of examination of the mucous membranes

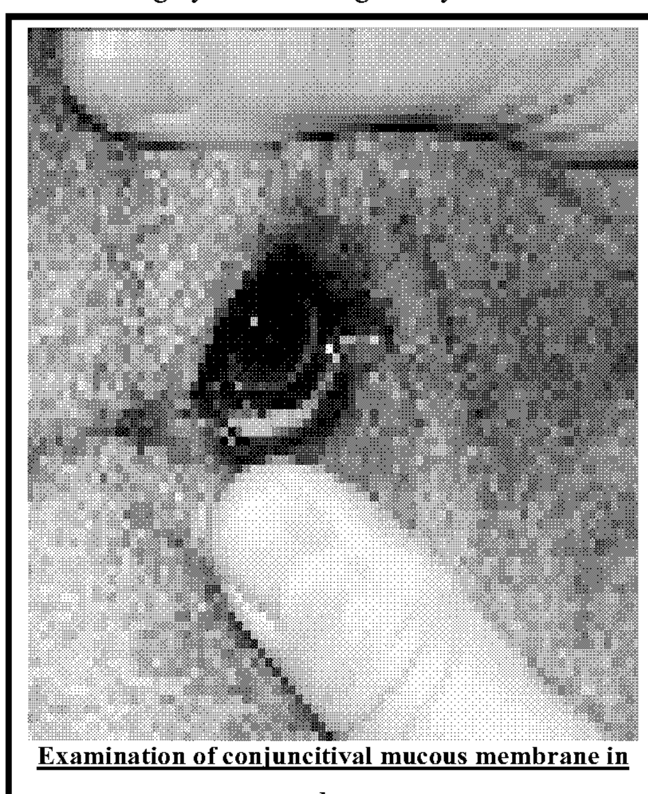
-Colour of the mucous membrane.

-Presnece of exudate or discharge

-Presence of abormal strucures or swelling.

CONJUNCITIVAL MUCOUS MEMBRANE:-

-Method of e xamination -Conjuncitival mucous membrane can be examined by opining and gentally everting of each eye lide inturn by using of forefinger and thumb of one or both hand and the eye ball is pouched back by pressure on the non everting eye lid .-In dog 3rd. eye lid or membrana Nictitans which is covered with an extension of bulbar conjunctiva can be examined by laying the forefinger along the upper eye lid and pressing it gently and at the same time the thumb pressing downwards on the lower eye lid.



Examination of conjuncitival mucous membrane in dog

B-Color Of The Mucous Membrane.

- Normal colour of the
conjuncitival mucous membrane is rosey or pinkish in colour and it is smooth ,shiny and free from any abnormal lesions.

-Abnormal color:-

1-Pale color:- as in case of -Dehydration -Lead poisoning
-Anemia except hemolytic type -External parasites -Nepheritis
-Gastrointestinal nematodes -Wasting or malignant diseases as TB.

2-Reddish coloration or congested as in case:-
-Febrile conditions -Conjunctivitis
-Obstruction of the jugular vein may lead to retention of large amount of blood in the head and cerebral hyperemia which leads to pushing of arterial blood to the head mucous membranes as oral or conjunctival membrane that give the reddish coloration of the head mucous membrane.



Ulcer in the eye lid of cat

3-Yellowish or icteric coloration as in case of:-
- Liver cirrhosis or hepatitis

-Phosphorous poisoning

-Gastric or duodenal catarrhal affection leading to obstruction of the bill duct.

4-Bluish or cyanosis as incase of:- -Carbon monoxide poisoning

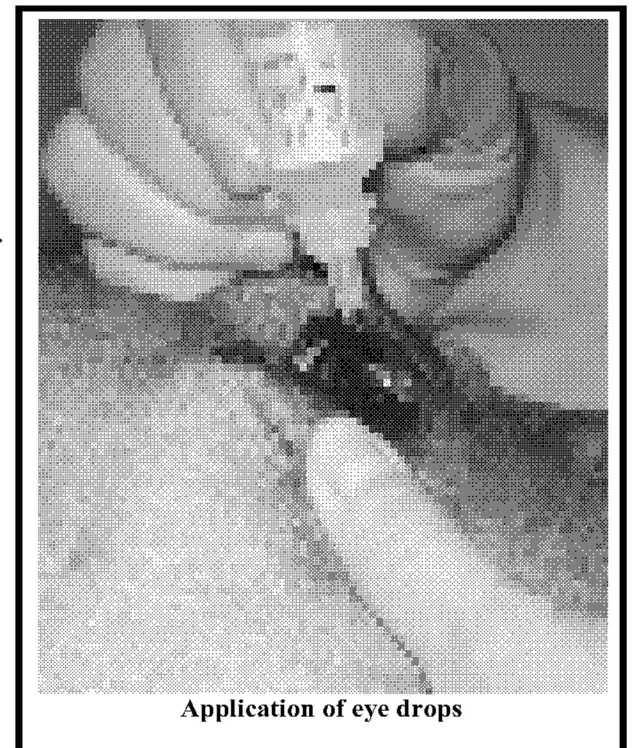
-Most of heart and lung diseases due to lack of oxygen

5-Peticheal hemorrhage as in case of: - -Septicemic diseases -Anthrax

B-Swelling Of The Mucous Membrane:-

-It is seen usually as a result of presence of exudates in the mucous membrane or in the submucosa .

-If such swelling is inflammatory it becomes hot and painful as in case of conjunctivitis.



Application of eye drops

C-Presence Of Discharge or lesions :-

-It may be due to secretion of the lacrimal glands

-Trauma

-As a result of vein stasis

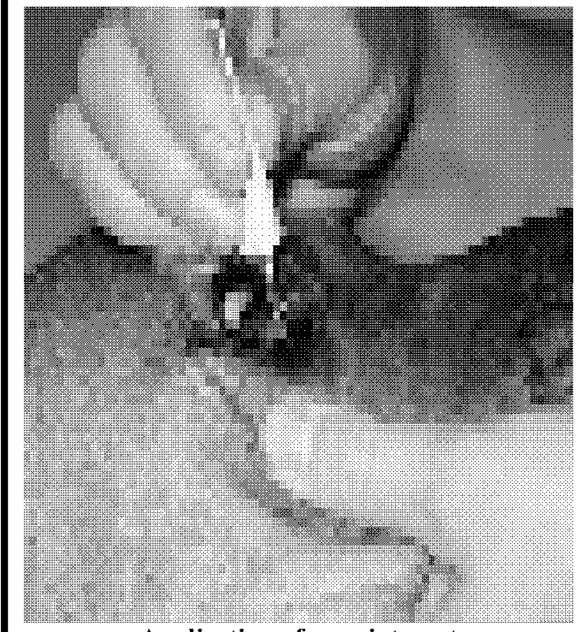
-Secretion may be serous mucoid or purulent in its nature according to the Pathological conditions.

*Ulcers may be present in the mucous membrane or around the eye due to old wound or fighting.

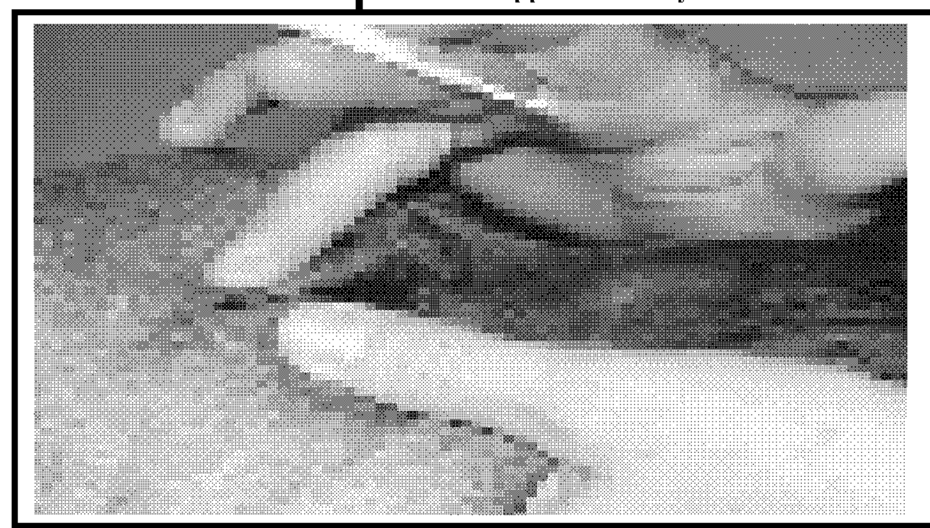
<u>*Application of eye drop</u>

<u>(Don't make the bottle touch the eye)</u>

<u>*Application of eye ointment</u> (application of eye ointment them make massage of the eye to distribute the ointment allover the eye)



Application of eye ointment



SUPERFICIAL LYMPH NODES IN PETS

-Lymph nodes is aggregation of lymphoid tissues and examinatio of the lymphatice sysytem (lymph nodes and lymph vesseles) is of great importante during examiantion of the aniaml ,affections of the lymph nodes showing charachtristic lesions in various infectious diseases because lymph nodes acts as filter of the infective agents

-The following table show each lymph node and its location:-

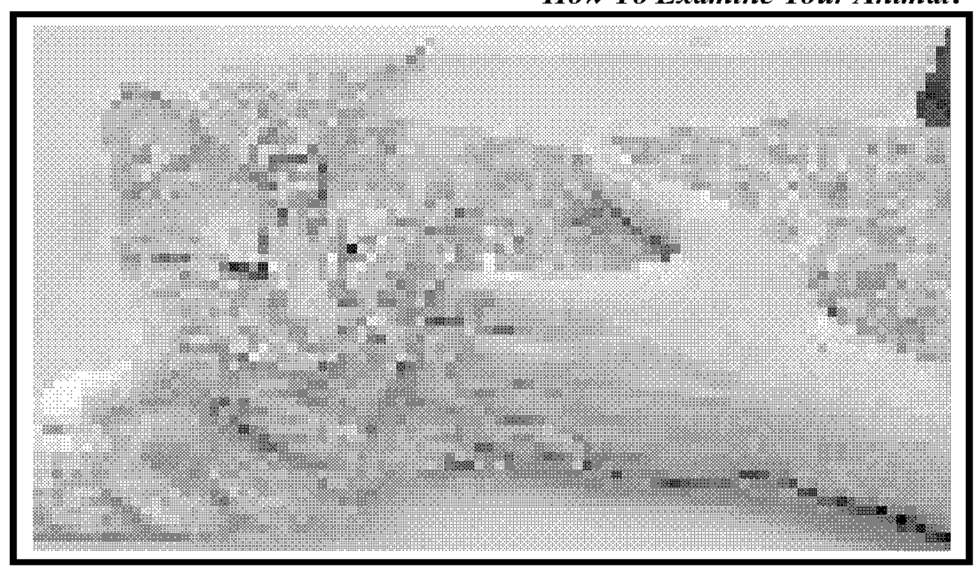
Lymph node	*Location*
1-Prescapular	-In front of the scapula and slightly dorsal of the shoulder joint
2-Sub-maxillary	-Situated in the caudal part of the intermandibular space near to the angle of the jaw.
3-Supramammary	-At the base of the udder
4-Superficial inguinal	-At the base of the scrotum
5-Sub-paraotid	-Under the parotid salivary gland at the base of the ear
6-Reterophrengeal	-Present in the posterior wall of pharynx or at the beginning of the neck posterior to the mandibular angle

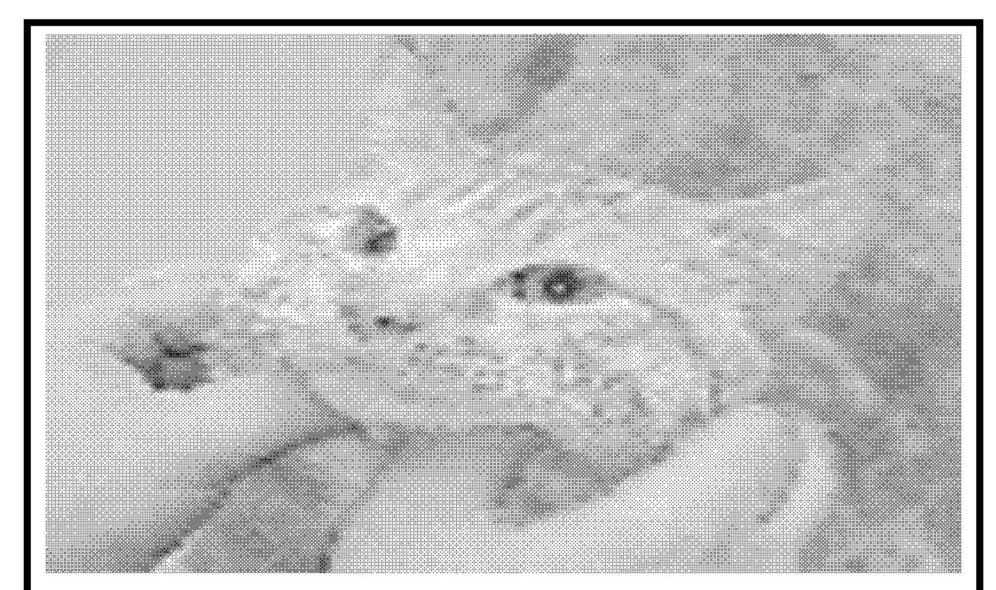
NB. Prefemoral lymph node not present in dog and cat.

NB. Any inflammatory lesions in the drainage region of the lymph nodes lead to enlargement of the lymph nodes as in case of mastitis leads to enlargement of the supramammary lymph node.

-Pointes of examination of superficial lymph node will be discussed in the following table:-

Point	Normal	Abnormal	Etiology
-Size	Varies greatly in normal usually large in young animal than adults.	Increased in size	TB, Carcinoma lymphadenitis or blood parasites
-Consistency	Firm on palpation	Hard or fluctuating on palpation	Fibrosis or Abscess or inflammation
-Surface	Usually lobulated	Loss of its lobualtion	Inflammatory condition
-Movement	Movable	Less movable	Lymphadenitis
Temperature	Take the skin temperature	Hot	Lymphadenitis

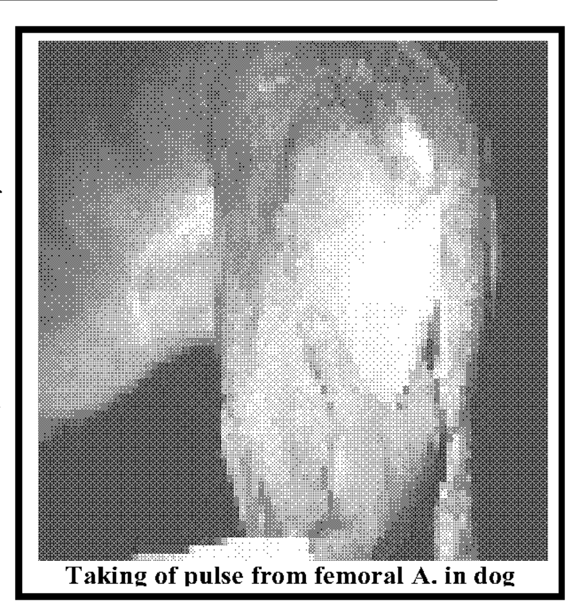




Examination of lymph node in (prescapular and submandibular) cat

TAKING THE PULSE IN DOG AND CAT

*The process of taking of the pulse in conjunction with examination of the superficial blood vessels and heart and if possible the other compartments of the circulatory system may give an opinion about the healthy stat of the cardiovascular system.



Taking of pulse from femoral A. in dog

Site of taking of pulse :

* Pulse taken from the ***femoral artery*** (located high up on the medial aspect of the thigh) the artery from which the pulse taken should be charactrized by – superficial -medium sized -laying in adherence of solid mass as bone or tendon .



Taking of pulse from femoral A. in cat

Taking of pulse from femoral A. in dog

Technique:

*Taking the pulse occurred mainly by gentl pressure on the examined artery that overlying bone by the tip or ball of one or more than one finger to tense the skine and underlying artery to make the pulse wave detectable easily.

CHARACTYERS OF THE PULSE IN PETS:-

RATE:-65-90 pulse waves /minute in large breed dog

-90-120 pulse waves /minute in small breed dog

-110-130 pulse waves /minute in cat

-***Tachycardia*** (increased pulse rate) as in case of:-

-Acute pain -Peritonitis

-Pyrexia -Pneumonia

-Valvular diseases -Toxemia

-Great loss of blood

-Bradycardia (decreased pulse rate) as in case of:-

-Debility - Dehydration

- Low blood pressure

- Some cases of jaundice

-Senile dog

-Gastric ulcer

-Prior to death

-Cerebral tumor

PULSE RHYTHM:- Pulse rhythm means that the time interval between the peak of serious of successive pulse waves and it is irregular normaly in pet animal .

PULSE AMPLITUDE OR QUALITY:-

- Pulse amplitude maens that it is the degree of the digital pressure that required for oblitration of the pulse waves and it may be decreased as in case of myocardial weakness or increased as in case of aortic semilunar vulve incompetance and it is called "water hammer pulse ".
- Abnormal pulse amplitude may be due to structural or functional diseases of the heart or abnormalities in the blood vessels.

- Types of abnormal pulse amplitude

1- Strong pulse :- In this type of pulsation the artery is abnormaly distended at each pulsation .

- The amplitude is greater than normal and the pulse wave not obliterated by digital pressure due to increase stroke volume as in case of:-

- Pyrexia -Ventricular hypertrophy -Pleurisy -Peritonitis

2-Hard pulse: - In this type of pulse the wall of the artery is tensed, hard and the pulse wave not readily obliterated as in case of:-

-Tetanus - Hypertension

3-Small, weak or soft pulse: - In this type the artery is poorly distended and the pulse wave easily to be obliterated by normal digital pressure as in case of:- -Dehydration -Anemia -Myocardial debility due to toxemic condition

4-Running down pulse: - In this type the pulse is progressively increased and it's amplitude is decreased as in case of:- -Ventricular fibrillation (prior to death).

5- Thready pulse: - In which the pulse is small and easily obliterated as in case of –acute diseases

6-Wirey pulse: - In this type the pulse is small but hard at the same time as in case of: - - Acute endocarditis or pericarditis.

ABNORMAL PULSE TYPE :-

-Jugular pulse(not common in dog and cat) :- Which may be

-***True (pathological)*** jugular vein pulsation as in case of pericarditis or tricusped valve incmpetence or insufficeincy .

-False (physiological) jugular vein pulsation as in case of lean or emaciated animal.

PHYSIOLOGICAL FACTORS AFFECTING PULSE :-

1-Age 2- Breed 3- Sex

4-Environmental temperature 5-Exercise

6-Parturation, lactation or pregnancy 7-Posture of the animal

RESPIRATION IN PET ANIMAL

1- Respiratory rate can be detected in dog and cat by :-

*Counting the numbers of movements of the chest by inspection

*Palpation of the ventral aspect of the costal area *Holding a paper in front of the nostrils of the animal and counting its movement

CHARACTERS	NORMAL	ABNORMAL	INDICATIONS
1-Rate	15-20/min. in dog 20-30 /min. in cat	-Hyperpnoea -Polypnaea -Oligapnoea	-Fever -Exercise -Pneumonia -Colic -pleurisy -Brain diseases
2-Type	Costal	-Wholly abdominal -Wholly thoracic	-chest painful conditions -abdominal painful conditions
3-Amplitude	Calm	-Labored or deep -Shallow	-Dyspnoea or obstruction of upper respiratory tract -Low oxygen level -Pneumonia -Abdominal respiration
4-Rythm	Irregular	-Prolonged inspiration -Prolonged expiration -Dropped respiration -Syncoptic respiration	-Canine distemper -Pulmonary emphysema - Brain diseases -Shock and near to death

2-Hyperapnoea:- Means that increase the respiratory rate with or without increasing of the depth of respiration.

3-Polpnoea:- Means that increase the respiratory rate with reduction of the depth of respiration.

Digestive System In Pets

Points of examination:-

(I)-Inspection (manifestations of the digestive disorders)

(II)-Examination of the oral cavity

(III)-Examination of pharynx and esophagus

(IV)-Examination of the abdomen

(V)-Special methods of examination

(I)-Inspection (manifestations of the digestive disorders)

Inspection of the digestive system means that general observation of the digestive system prior to physical examination to detect the following points :-

1- Disturbances in eating and appetite:-

Variation in the appetite includes:-

A- Hyperphagia or polyphagia: - This manifested in the form of excessive consumption of food as in case of

-Parasitism either internal or external -Diabetes mellitus (DM)

-Normal in late stage of pregnancy or in lactating animal

-After starvation -Hyperadrenocorticism (Caushion syndrome)

B-Inappetance: - This is manifested in the form of incomplete loss of appetite or the animal reclines to eat certain type of food as in case of:-

-Painful condition as in colic -Gastric ulcer

-Sudden change in diet, weather or management

-Oral lesion as in case of stomatitis

-Fear or excitation of the animal

C-Anorexia: - This is manifested in the form of complete loss of appetite (off food) as in case of :-

-Febrile condition -Poisoning conditions

-Toxemic or septicemic diseases -Brain diseases

D- Depraved appetite: - This is manifested in the form of eating of unusual diet or pica as in case of:-

-Rabies -Chronic gastritis

-Calcium, phosphorous or vit.D deficiency

E-Thirst: - This is manifested in the form of excessive consumption of water (polydepsia) and dry mouth as in case of:-

-Persistent vomition or salivation -Sever enteritis

-D.M. -Catarrhal enteritis -Caushion syndrome

-During initial stage of many febrile conditions

B-Disturbances in mastication and prehension:-

1-Prehension (holding up and intruducing the food in the mouth) Mastication (tearing of the food by the teeth to be ready for swallowing and digestion) and vary according to speceis of the animal but in pet animals, teeth, tongue and lips are the main organs of prehension and mastication.

2-Dog and cat take up solid food by the teeth and when the food not readily they use their forelegs in tearing of the large particle food.

3-Dog and cat convey the fluid into the mouth by the tongue as a ladle.

4- Abnormal prehension and mastication manifested in the form of:-

-Salivation and regurgitation of food

-Smacking of the lips -Painful and careful mastication

5-Abnormal prehension and mastication as in case of :-

- Stomatitis -Cheilitis -Glossitis - Tonsillitis

-Sharp or broken teeth -Palatochesis -Paralysis of tongue or lips

C-Disturbances in Swallowing or Deglutition:

1-Deglutation means that transportation of the masticated food from the mouth to the stomach through the pharynx and egophagus.

2-Tangue, floor of the mouth, palate laryngeal muscles and esophagus are the main organs of deglutition.

3-Disturbances in the deglutition or swallowing manifested in the form of dysphasia which manifested in the form of: - -Regurgitation of food and or water, extension of the head and neck with salivation

4-Disturbances in the deglutition or swallowing as in case of:-

-Acute pharyngitis or tonsillitis

-Foreign body or tumor in the pharynx or esophagus

-Esophageal obstruction or esophygitis or diverticulum.

D-Sialosis or Excessive Salivation:-

As in case of:-

-Stomatitis -Gingivitis -Glossitis -Rabies

-Tonsillitis -Choke -Organ phosphorous poisoning

-Iodisim -Sharp teeth -Canine Distemper

-Injection of some anesthetic drug as Novocain

E-Dry mouth or Sialoporia:-As in case of:-

-Atropine sulfate toxicity -Sialolithiasis

-Ascitis or edema -Febrile conditions

F- Vomiting or Emesis:-

Vomiting means that forcful ejection of the food and liquid gastrointestinal contentes through esophagus and mouth and it may be:-

1-False or projectile vomiting Due to irritation of the gastric mucosa as in case of presence of needle or thorn in the posterior part of the tongue and this type of vomiting occurred without retching movement.

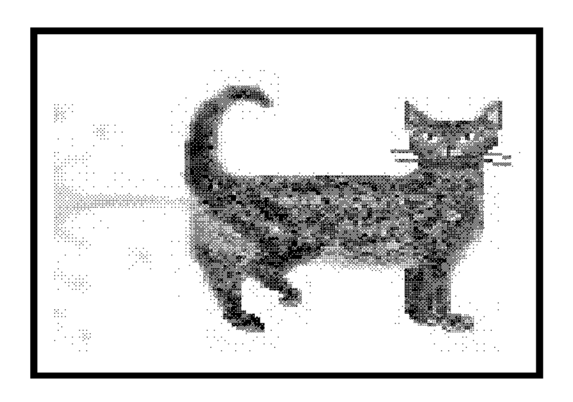
2- True vomiting Due to stimulation of the vomiting center through receptors which present in the gastrointestinal tract and this type of vomiting is more common in the pet animal as in case of :-

-Gastritis -Enteritis -Pyloric obstruction

- Nephritis -Bowel obstruction -Brain diseases

-Injection of some drugs as morphine

G-Diarrhea:-



1-Diarrhoea means that frequant evacuation of watery stool or increase the water contents of the stool with or without increasing of numbers of defecation.

2- Diarrhea may be associated with rising in the body temperature as in case of bacterial or viral infection as in case of canine distemper or salmonellosis or acute gastritis or enteritis.

3-Diarrhoea may be associated with normal body temperature as in case of:-

-Parasitic infestation as in case ascariaseis

-Nutritional deficiency of vitamin- A

-Sudden change in the diet.

H- Constipation:-

-Constipation means that difficult defecation or evacuation of dry or scanty faeces as in case of :-

-Intestinal atony or obstruction in old dog -Liver diseases

-Feeding on very dry food -Lack of water -Megacolon

-Proctitis (inflammation of the rectum)

-Dehydration -Trauma in nerve supply of the large intestine

Physical examination of the digestive system

I-Examination of the:-
- -Oral cavity
- -Opening &closure of the mouth
- -Oral mucous membrane
- -Tongue, gum and teeth

II-Examination of the :- pharynx &esophagus
- A-External examination
- B-Internal examination

III- Examination of the abdomen
- A- Inspection
- B- palpation
- C-Special methods

Physical examination of the oral cavity

A-Opening and closure of the mouth:-


Opening of mouth in dog

The mouth is difficult to be opened as in case of:-

-Dislocation of the jaw

-Tetanus or strychnine poisoning

-Tonsillitis, acute inflammation of the pharynx or larynx

-Acute dental pain.

The mouth is difficult to be closed as in case of:

-Rabies

-Brain diseases which lead to paralysis of the jaw

-Foreign body in the mouth

-Fracture of the maxillary bone


Examination of oral mucous membrane

B-Examination of the oral mucous membrane:-

* Firstly we should make good restraining of the animal by the help of the owner (don not approach to the dog or cat without its owner).


Examination of teeth and gum

1-Colour: - The normal color of the mucous membrane of the oral cavity in pet animal is rosy and the abnormal color as in case of :-

****Pale***: - As in case of anemia –shock –hemorrhage

****Yellowish or icteric***: - As in case of liver diseases or Encephalitis

****Cyanosis or bluish***: - Bad ventilation –Pneumonia – Heart diseases

****Congested or reddish***:-As in case of febrile diseases – Stomatitis

2-Odor of the mouth: - Abnormal odor of the mouth may be

****Acetone odor*** as in case of late stage of DM.

****Urinefrous odor*** as in case of uremia –FUS(Feline Urogenital Syndrome)

****Offensive or putrefied*** as in case of: Dental cares –Gangrenous stomatitis –Hemorrhagic gastroenteritis

3-Oral lesions and foreign bodies as:-

****Ulcers*** as in case of: - Ulcerative stomatitis

****Redding*** or swelling as in case of: - Trauma –catarrhal stomatitis –using of caustic preparation as arsenic or iodine preparations.

****Follicles*** as in case of: - Follicular stomatitis

***Needle**, fish spine, piece of bone my present embedded between the teeth and gum.

***Hotness** as in case of: - Febrile conditions.

C-Examination of the tongue:-

During examination of the tongue the mouth must be kept opened by using of gage and the tongue is grasped and pulled forward then palpated by the finger all over it's surface and detect the following points :-

1-Color (normally it is pale rosy) and abnormal color may be:-

*Deep red as in case of: - Glossitis – Distemper – Fever

**Bluish as in case of*: Suffocation –carbon monoxide poisoning - dyspnoea

**Black as in case of: -* Gangrene of the tongue.

**Brown red: -* as in case Hemorrhagic enteritis

2-Dryness of the tongue as in case of: - * Fever *Atropine medication *Diarrhea or dehydration *Ascitis *Glossoplagia (paralysis of the tongue)

3-Presence of ulcers or sores or as in case of:-

*Distemper *Leptospirosis *Toxemia * DM.

* Contact with broken or sharp teeth * Thermal or chemicals burns.

D-Examination of the teeth: - Teeth should be examined during examination of the oral cavity to detect any dental cares, broken teeth or sharp teeth.

Clinical Examination Of Pharynx and Tonsils

The area of throat can be examined by two methods:-

A- External examination. (I)-Inspection (II)-Palpation

B- Internal methods

A- External Examination.

(I)-Inspection: - The area of throat should be inspected to detect any abnormal swelling in this area as in case of:-

– Parotitis -Pharyngitis - Goiter or lymphangitis or obstruction

***(II)-Palpation**:-* -The area of throat should be examined by palpation to detect the nature and the origin of any abnormal swelling that detected by inspection so the abnormal swelling my be inflammatory as in case of pharyngitis or lymphadenitis or the swelling my be non inflammatory as in case of goiter also to detect the origin of the swelling either form the pharynx, esophagus, thyroid glands or any other deep sited structures .

- Palpation can be done either by one or two hand while the animal stands on the table

-In case of unilateral lesion the animal incline its head to the healthy side

-The most of the pharyngeal affections usually associated with dysphagia (mentioned before)

B- Internal method:- -The pharynx and tonsils can be examined internally by using of endoscopies to detect any abnormal lesion in the internal mucous membrane or in the tonsils.

-We can use the tongue depressor in the internal examination of the tonsils.

Clinical Examination of Esophagus

Esophygus can be examined clinically by A- external method through inspection and palpation B- internal method by using of esophygescopy or stomach tube .

-Inspection :- Inspection of the cervical part of the esophagus on the left side of the neck to detect any abnormal swelling in this region as in case of choke or esophageal diverticulum .

-Palpation: - Palpation of the esophagus in healthy conditions is very difficult because it cannot be palpated except in case of enlargement as in case of esophygitis or choke and in such condition we can detect the cardinal sings of inflammation as hotness, pain or palpation of the lodged foreign body respectively .

-Internal examination of the esophagus can be done by using of esophygoscopy or stomach tube.

Clinical Examination of The Abdomen

*The abdomen in pet-animal can be examined clinically by:-

(A)-Inspection (B) - Palpation (C)-Percussion

(A)-Inspection of the abdomen:- to detect

1-Generalized distension or increased sized abdomen: - as in case of:-

-Ascitis -Adipose tissues -Bladder distention or rupture –Hair ball

-Gastric dilatation -Advanced pregnancy – Intestinal obstruction

2-Localized distention of the abdomen: - as in case of:-

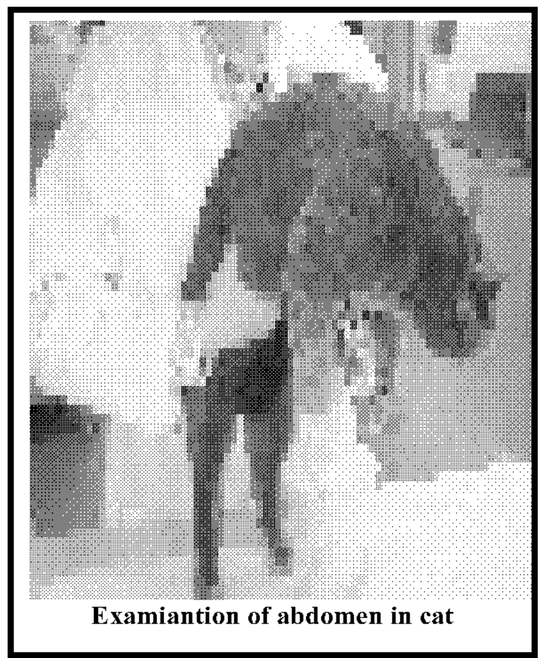
-Abscesses – Haematoma -Hernia –Localized edema

3-Generalized decreased abdomen (sunken or tucked up appearance or herring gutted appearance abdomen) as in case of:-

-Diarrhea -Dehydration -Malnutrition for long period -TB.

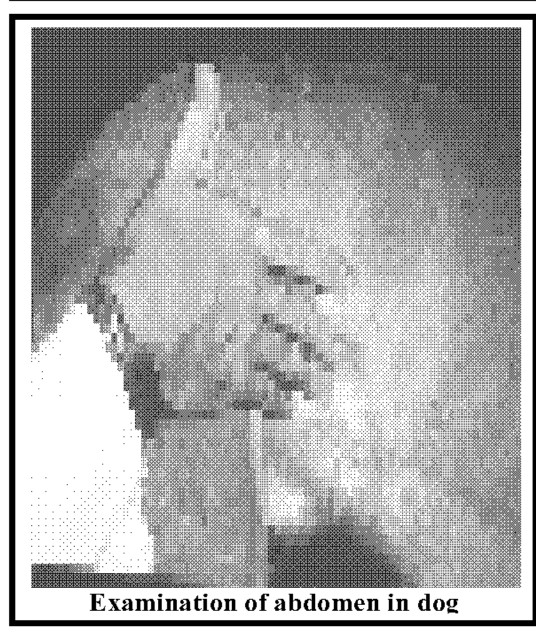
– Pancreatic diseases – DM. -Insufficiency in the drinking water.

(B)-Palpation of the abdomen:-


Examiantion of abdomen in cat

- Palpation of the abdomen in the pet animal is of good value and it occurred by both hand with the finger extended together and the thumb finger is upward and one hand on each side then apply sufficient pressure to overcome the natural resistance of the abdominal wall, so that each organs can be palpated easily as stomach, liver and spleen.

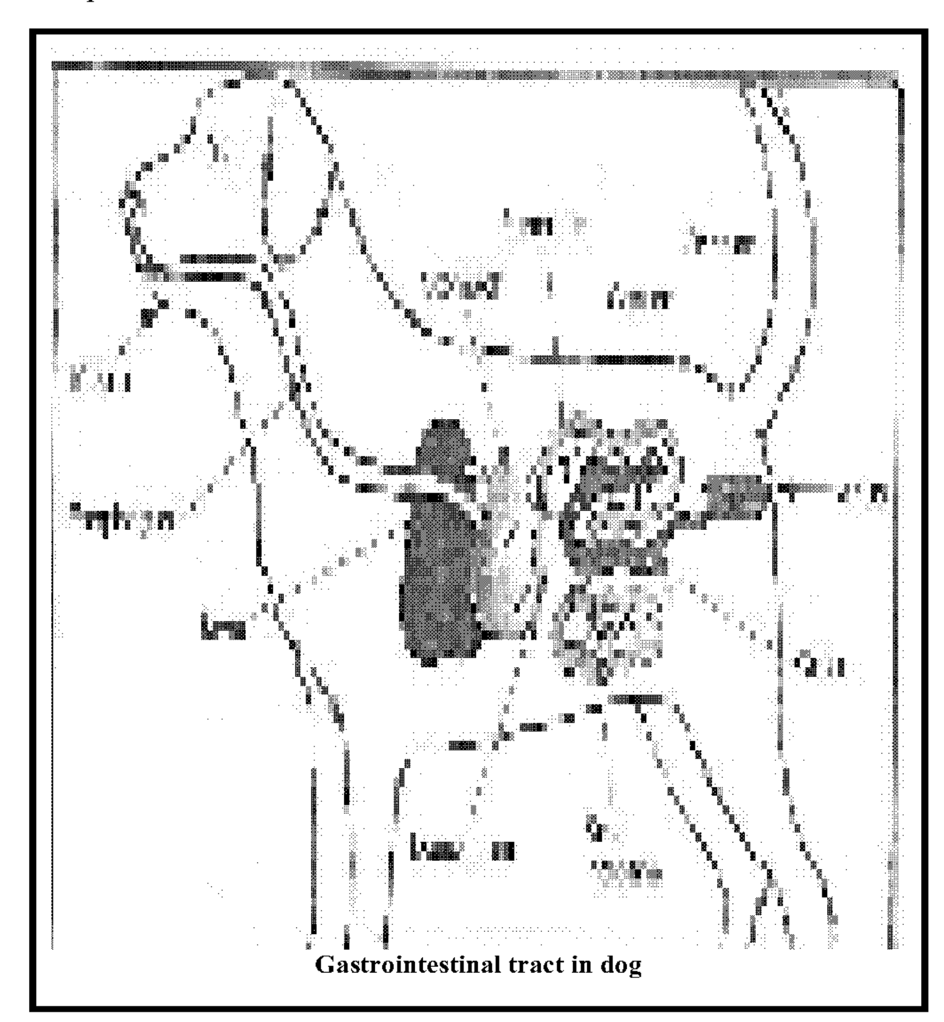
-Palpation of the stomach: - - Stomach in pet animal is pyriform in shape and the cardiac area is round and large in size while pyloric area is cylindrical and small in size.


Examination of abdomen in dog

-The stomach when it is not distended with food it is localized in the concavity of the diaphragm on the left side of the abdomen and cannot be palpated and it is separated from the abdominal

floor by the liver and intestine.

-When the stomach is distended with the food the pyloric area of the stomach is expanded at the left side and can be palpated behind the costal arch on the abdominal floor on the left side between the xiphoid cartilage and pubis.

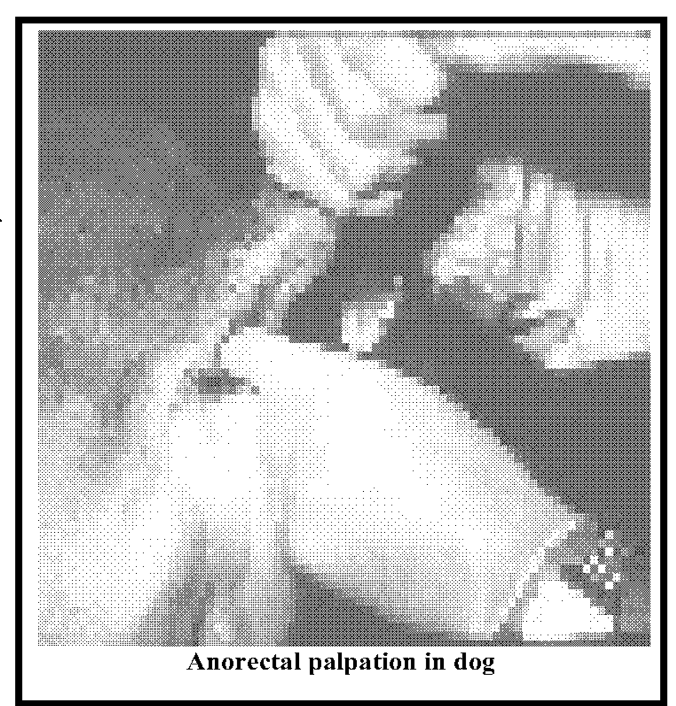


Gastrointestinal tract in dog

-**Palpation of the spleen:-** Spleen can be palpated only in case of enlargement (as in case of spleenomegaly) and it is appeared as firm or semisolid mass in the form of tongue shape present on the cranioventral aspect of the abdomen behind the left costal arch .

-Palpation of the liver: - Liver can be palpated in case of enlargement behind the costal arch of the right side

-**Finger palpation of the anal sacs** as in case of anal saculitis by anorectal palpation for diagnosis or treatment the inflammation of the anal sacs by finger evacuation.



Anorectal palpation in dog

(C)-Percussion of the abdomen: - In case of tempany (rare in dog) it give dump or tympanic sound and in case of ascitis it give fluctuating or thrilling waves.

ABDOMENAL PAIN:-

*Abdominal pain may be true pain which originated from lesion or disease in the gastrointestinal tract or it may be false abdominal pain that originated due to lesion or disease outside the gastrointestinal tract as urogenital system so thoroughly examination of the animal is very important to avoid misdiagnosis because most of the sings of abdominal pain are similar. And the following table will show some sings and some etiological causes of abdominal pain.

SIGNES	ETIOLOGY
-Restlessness and depression	-Peritonitis
-Rapid respiration	-Gastritis
-Spasm of abdominal muscles	- Colitis
-Arched back	-Renal or hepatic colic
-Lowering of the head	-Intestinal colic
-Ears drooping	-Gastric ulcer
-Refuse to eat or take	
notice of its owner	-Constipation
-Praying position	- Intestinal obstruction
-Looking for cold place	- Uorogenital affections
-Distension of the abdomen	-Pancreatitis

EXAMINATION OF URINARY SYSTEM IN PET

INTRODUCTION:-

- Urinary system consists of two kidneys, two ureters, urinary bladder and urethra; the functional unite of the kidney what so called nephron. -Kidney has main two functions

A-Excretion of waste products of metabolism including uric acid, urea, creatinine, ammonia and hydrogen ion.

B-Maintenance of the electrolytes balance (sodium, potassium, chloride ………etc.).

-Excretion of the waste products occurred by simple filtration through the glomerulus and the amount of the filtrate mainly depends upon:-

-*Osmotic pressure of the plasma

*Hydrostatic pressure in the renal capillaries

*Numbers of the functioning glomerulus

-Normally the filtrate contains little amount of lipid and protein but the selective reabsorption through the renal tubules leads to retention of these substances and excretion of the other waste products.

-Reabsorption of the waste occurred in the proximal convoluted tubules by osmosis causing reduction of the amount of the execrated water to 20%, while the water is more concentrated in the distal convoluted tubules and finally in the collecting ducts under the influence of the anti-diuretic hormone which excreted from the posterior pituitary gland .

-There are two types of hormones that affecting in the functions of the kidney which may be secreted outside or from the kidney:-

(I)-Hormones excreted outside the kidney:-

1-Aldesteron:-, which excreted from the adrenal cortex and play an important role in the regulation of the potassium level.

2-Parathyroid hormone: - Which excreted from the parathyroid gland and play an important role in the regulation of calcium and phosphorous level.

3-Cortisol like steroid:-Which excreted from the adrenal gland and play an important role in the water concentration.

(II)-Hormones excreted from the kidney:-

1-Erythropioten hormone, which play an important role in the process of erythropoiesis, so in the kidney diseases usually associated with anemia.

2-Renine hormone: - for regulation of the secretion of the aldesteron hormone.

-Diseases of the kidney ,ureters, urinary bladder or urethra leading to interference with the glomerular infiltration causing disturbances in the selective reabsorption of protein ,water ,glucose …….etc.

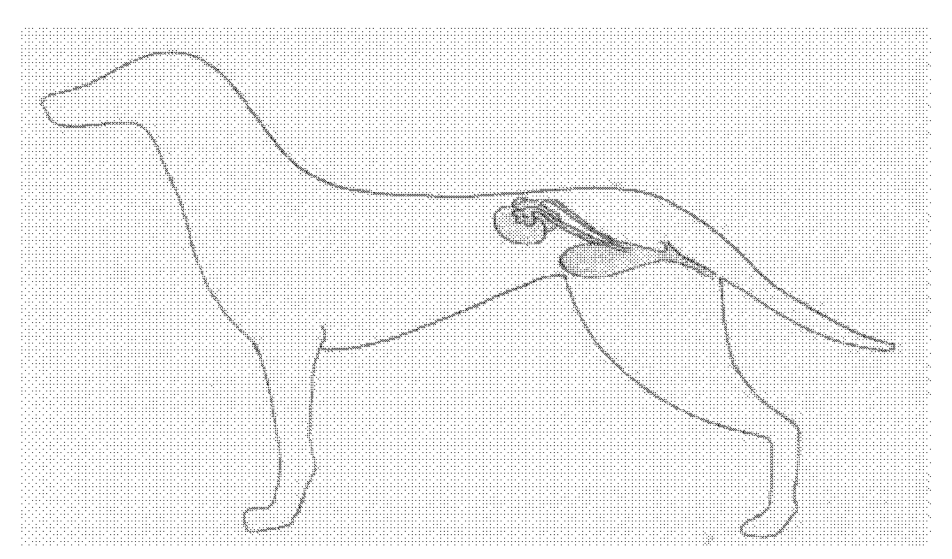
-When there is loss of function of part of the kidney cells (nephrons) it called ***renal insufficiency***, while when there is loss of function in the all cells it called ***renal failure.***

REGIONAL ANATOMY

1-Rrigh kidney: - It has fixed position ventral to the sub-lumber muscles opposite to the body of the 1st. 2nd. And 3rd. lumber vertebrae and it can be palpated. (In some cases the cranial part may be extended under the last rib).

2-Left kidney:-it has variable position due to it is attached loosely and its location mainly depend on the degree of fullness of the stomach.

*When the stomach is empty the left kidney take the position similar to that of the right one ,while when the stomach is distended by food the left kidney present ventral to the sub-lumber muscles opposite to the transverse process of the 3^{rd}.,4^{th}. And 5^{th} .lumber vertebrae.



Urinary tract in dog

3-Ureters: -*The ureters are originated at the renal pelvises and terminated at the bladder and they are collapsible tubes less than 0.3mm. in diameter situated toward the dorsal aspect of the caudal region of the abdomen and deviated near to it's termination to the side wall of the pelvis where they enter the dorsal wall of the bladder near to it's neck.

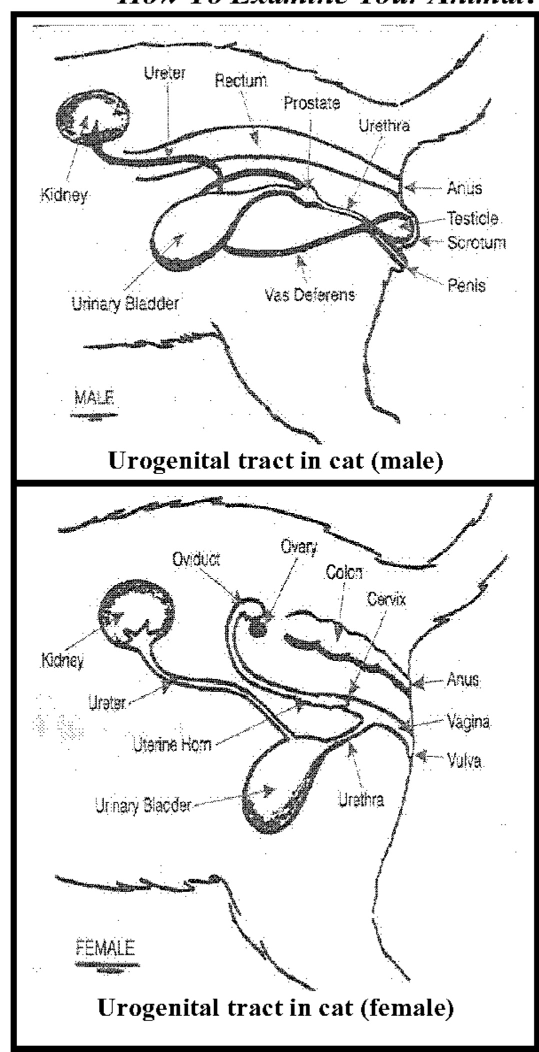
*They can not be palpated clinically.

4- Urinary bladder:-

*It varies in it's location according to it's distention

with the urine so, when it is empty it is situated in the pelvis cavity and when it is distended with urine it's neck is situated at the cranial border of the pelvic bone while it's vertex is extended to the umbilicus .

In male dog the neck of the urinary bladder and the proximal part of the pelvic urethra are surrounded by prostate gland.



Urogenital tract in cat (male)

Urogenital tract in cat (female)

5-Urthera:-

*The pelvic part of the urethra which is proportionally long terminates at urethral arch in large bulb like structure.

*The urethra in male is consists of two parts penile and pelvic part and it is long and narrow while in the female it is one part and it is short and wide and the external urethral orifice is situated on the floor of the vulva 2.5cm.from the ventral commisure .

Manifestations Of Urinary Disorders

-Abnormal Posture of Urination:-

-Female dog normally flex the hind legs and lowering the perineum to which a few centimeters of the ground when urinate.

-Male dog raises and abducts of hind leg and appear to direct the discharged urine against selected object.

-Abnormal posture of urination may indicate to diseases in the urinary tract as in case of cystitis, nephritis or lesion in the vertebral column or spinal cord.

B-Frequency of urination:

***The amount of the excreted urine varies according to:**

-The amount of consumed water.

-The amount of water that produced by metabolism or other processes.

-The amount of fluid that excreted by other routs as respiration of defecation.

-Adult dog urinate voluntary at frequent intervals.

-Abnormal frequent urination (pollakuria) may be associated with or without polyuria as the following table:-

Pollakuria with polyuria	Pollakuria without polyuria
1-DM or DI 2-In cold weather 3-Administration of diuretic drugs	1-Occurred when there are changes in the urine quality so it becomes irritant for the urinary tract as in case of. -Acute nephritis, pyelonephritis, cystitis, calculi or residual urine with bacterial decomposition and ammonia production.

Frequency of urination may be decreased as in case of:

1- Uretheritis (inflammation of the urethra).

2- Partial obstruction of the urinary bladder or urethra.

3-Spasm in the external sphincter of the urinary bladder which usually due to lesions in the lumbosacral area which leads to:

4- Posterior paresis or paraplegia.

5-Inability of the animal to adopt with the normal posture of urination so, it leads to incomplete emptying of the urinary bladder which usually associated with decrease the frequency of urination.

C-Oliguria and anuria:

*Oliguria means that decrease the amount of excreted urine than the suspected volume, while anuria means that absence of urination and it may be occurred under the same circumstances of oliguria as in:-

Conditions that associated by loss of body fluids as in case of:

- Hemorrhage - Enteritis
- Shock - Dehydration
- Vomiting - Excessive salivation
- Congestive heart failure- Peripheral circulatory failure
- Terminal stage of all forms of nephritis or renal failure.

D-Pain and Dysuria:

1-Some disease of urinary tract causing sufficient discomfort, so that the animal evinces (show) signs of abdominal pain and dysuria (painful urination).

2-Dysuria can be seen as in case of:

*Cystitis (associated with groaning all the time).

*Urethritis (associated with groaning which disappeared gradually after the end of urination and not recurrent until the next urination).

3-Dysuria gives the signs of abdominal pain as mentioned before in the digestive system.

NB: *Urine incontinence means that involuntary urination which common in the dogs that due to paralysis of the internal sphincter of the urinary bladder due to sympathetic defects or it may be due to fear or genetic factors.

Physical examination of the urinary system

(I)-Kidneys:1-Kidneys can be palpated through the abdominal wall in the majority of medium sized and small animals and the left kidney even in some large dogs.

2-In cats due to the kidneys are proportionally large and pendulous, so they can be palpated from the abdominal wall easily.

3-During palpation of kidneys we should detect:

- Location - Size - Shape - Consistency
- Existence of pain - Characters of the shape

4-Enlargement of the kidneys may be due to:

- Neoplasia - Hydronephrosis - Some forms of nephritis

5-Reduction in the size of the kidneys may be due to:

-Atrophy - Interstitial nephritis - Dehydration -Circulatory failure

6-Existence of pain appeared by presence of the signs of abdominal pain and during palpation, the animal reluctant to stand for palpation.

7-Consistency may be fluctuating as in case of hydronephrosis or firm as in case of tumor.

(II)-Ureters and urinary bladder:

1-Ureters can not be palpated through the abdominal wall.

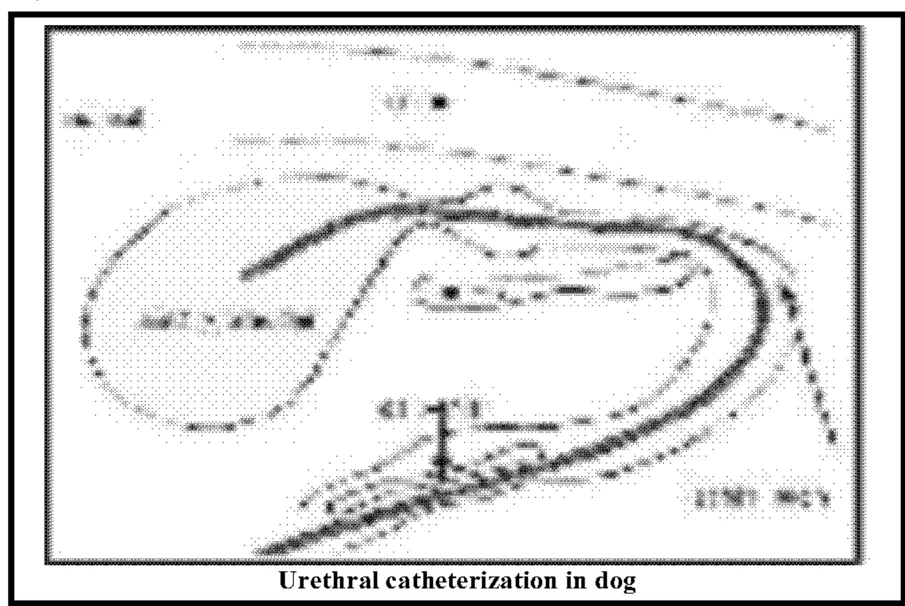
2-Urinary bladder can be palpated only when it is distended with urine, it can be palpated just cranial to pelvic inlet from both sides.

3-In male dog, enlargement of prostate glands can be palpated by digital rectal palpation and it reveals pain during palpation.

4-We should care to avoid rupture of the urinary bladder during palpation especially when it is distended with the urine.

Special methods for examining the urinary system:

1- Urinalysis 2- X-rays 3- Kidney function tests
4- Ultrasonography
5- Urethral catheterization



Urethral catheterization in dog

Cardiovascular System In Dog And Cat

***The cardiovascular system** includes the heart and blood vessels and performs the function of pumping and carrying blood to the rest of the body. The blood contains nutrients and oxygen to provide energy to allow the cells of the body to perform work.

Typical Symptoms Of Cardiac Disease Include:

1-Lethargy

2-Poor appetite (anorexia)

3-Coughing, this coughing is exacerbated by fluid buildup in the lungs (pulmonary edema).

4-Passing out (syncope)

5-Weakness

6-Difficult breathing (dyspnea)

7-Distended abdomen (especially if the right heart is diseased) called ascites

8- Pale or bluish colored gums (cyanosis).

9- Racing heart (tachycardia).

10-Decreased heart rate (brachycardia)

11-A heart murmur during auscultation with the stethoscope

12-Cool extremities to the touch

13-Reduced mental capacity

Examination of cardiovascular system includes:

*Examination of pulse and its characters as mentioned before.

*Examination of the heart and blood vessels.

Medical Expressions Used During Study Cardiovascular System:-

Cardiac- Pertaining to the heart

Arrhythmia- Irregular heart beat

Murmur-Abnormal flow of blood through the heart valves

Atrium-Two of the smaller heart chambers

Ventricles- Two of the larger heart chambers

Hypertrophy-Abnormally thickened heart muscle

Cardiomegaly- An enlarged heart

Myocardium- The heart muscle

Problems in examination of the cardiovascular system in pet animals:

1-In small breed dogs and cats or young animals the heart is small in size not more than 2.5cm. In diameter, so it is difficult of be examined.

2-In large breed dogs and cats the problems are:

3- Presence of mass of hair on the area of examination of the heart.

4- Inability to temporary arrest of the respiration (panting).

5- Inability to keep the animal quiet or still.

*So the clinical examination only not sufficient for the accurate diagnosis of the diseases of the cardiovascular system and consequently special aids should be used for accurate diagnosis as ECG, Echo or Ultrasonography.

Clinical Examination of the Heart

*Clinical examination of the heart includes the following points:

(I)-Inspection of the heart area.

(II)-Physical examination of the heart including palpation, percussion and auscultation.

(III)-Especial methods.

(IV)-Detection of the cardiovascular manifestations or history (as mentioned before.

Inspection of the heart

*The visible action of the heart can be seen from the thoracic wall as cardiac impulse (apex beat).

*The apex beat can be seen as a result of contraction of the left ventricle which comes in contact with the left thoracic wall from the level of the 4^{th} to the 6^{th} inter-costal spaces.

*Apex beat become more visible as in case of:

- Febrile conditions
- Excitation of fear
- Lateral displacement of the heart
- Myocardial diseases
- Cardiac hypertrophy

Physical examination of the heart

A-Palpation of the heart:

*Palpation of the heart occurred by the flat of the hand of detect the apex beat which can be detected at the level of 4^{th} to 6^{th} intercostals spaces and the abnormalities of the heart during palpation may be:

Increase the force of apex beat as in case of:

- Pneumonia
- Acute Mycarditis
- Hypertrophy of the heart
- Pericarditis or Endocarditis

****Decrease the force of the apex beat as in cases of:***

- Very fatty animal
- Hemipericardium
- Pulmonary emphysema
- Presence of large mass of hair

- Debility and weakness

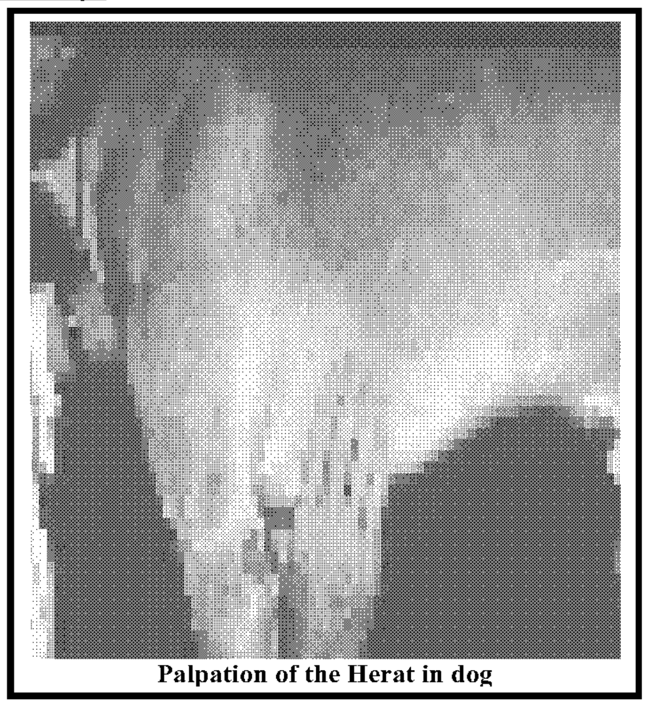
Painful palpation as in cases of:

-Acute pericarditis or pleurisy

- Fractured rib

-Inflammation of the skin over the area of cardiac dullness.

*By palpation we can detect the abnormal pulse rate as in case of tachycardia and bradycardia as mentioned before in the clinical examination of pulse.



Palpation of the Herat in dog

B-Percussion of the Heart:

*Percussion of the heart can be occurred on the chest wall in-between the 3rd and 6th intercostals spaces on the left side and 4th to 5th intercostals spaces on the right side.

*Normal percussion of the heart is ***Dull*** sound because the heart is gas free organ and the area of heart examination called area of cardiac dullness.

****Abnormalities of heart percussion in pet animals may be:***

1-Increase the area of cardiac dullness without pain as in cases of:

- Hydropericardium
- Cardiac dilatation
- Hypertrophy of the heart
- Neoplasm of the heart.

2-Increase the area of cardiac dullness with pain as in cases of:

- Acute pericarditis
- Acute pleurisy

3-Decrease the area of cardiac dullness or it is present in anterior position as in case of: -Pulmonary emphysema.

-Abdominal distention as in case of gastric distention.

-Cardiac displacement.

C-Auscultation of the heart:

*Auscultation of the heart can be occurred at the level of 3-6th intercostals spaces on the left side beneath and slightly dorsal to the elbow joint.

*The normal sound by auscultation is ***Lubb-Dupp*** sound.

Lubb sound: It is the sound which occurred due to contraction of the wall of the ventricles with the closure of the aterioventricular valves and tension of the cardia tendani and it is called first heart sound or systolic sound.

*Its characters are ***dull, deep load and prolonged***.

Dupp sound: It is the sound which occurred due to closure of the semilunar valves and relaxation of the contracted ventricles and it is called second heart sound or diastolic sound.

*Its characters are, ***sharper than first sound.***

Abnormal heart sound by auscultation

1-Murmurs:

*Murmurs means vibrating sound heard during the normally silent cardiac period in the presystolic pause or in the presystolic interval and it can be classified according to causes into:

****Systolic murmurs:***

-Can be heard follow the first or systolic heart sound as in case of:-

1-Insufficient closure of the tricuspid (right atreioventricular valve) or bicuspid valve (left atrioventricular valve).

2-Anemia.

3- Congenital heart diseases as PDA (patent ductus arteriosus) in young dog up to 4 months of age.

4- It is commence with the systolic phase or between systolic and diastolic phase.

Diastolic murmurs:

-It is associated with diastolic sound due to imperfect closure of the semilunar valve as in case of:-

1- Semilunar valve insufficiency.

2-Congenital abnormalities as in case of PDA (patent ductus arteriosus).

3-It is commencing with diastolic phase or in-between diastolic and the next systolic phase.

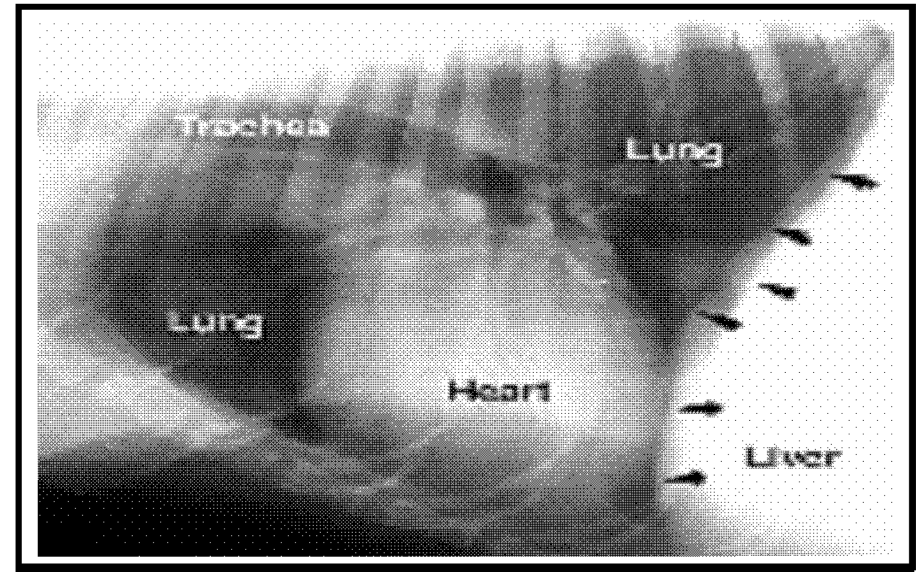
2-Frictional sound:(will be discussed in respiratory system)

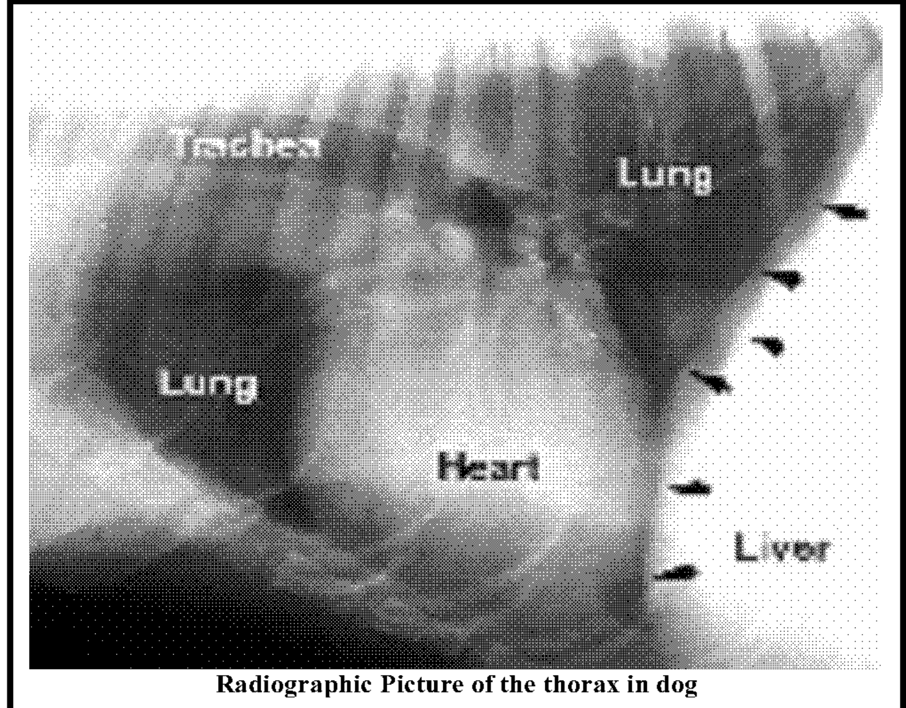
It is the sound which heard in case of: -- Pericarditis - Pleurisy

Special methods of examination of the cardiovascular system:

1-Electrocardiograph. 2-Echocardiograph. 3-Ultrasound.

4-Blood gases analysis. 5-Radiography.



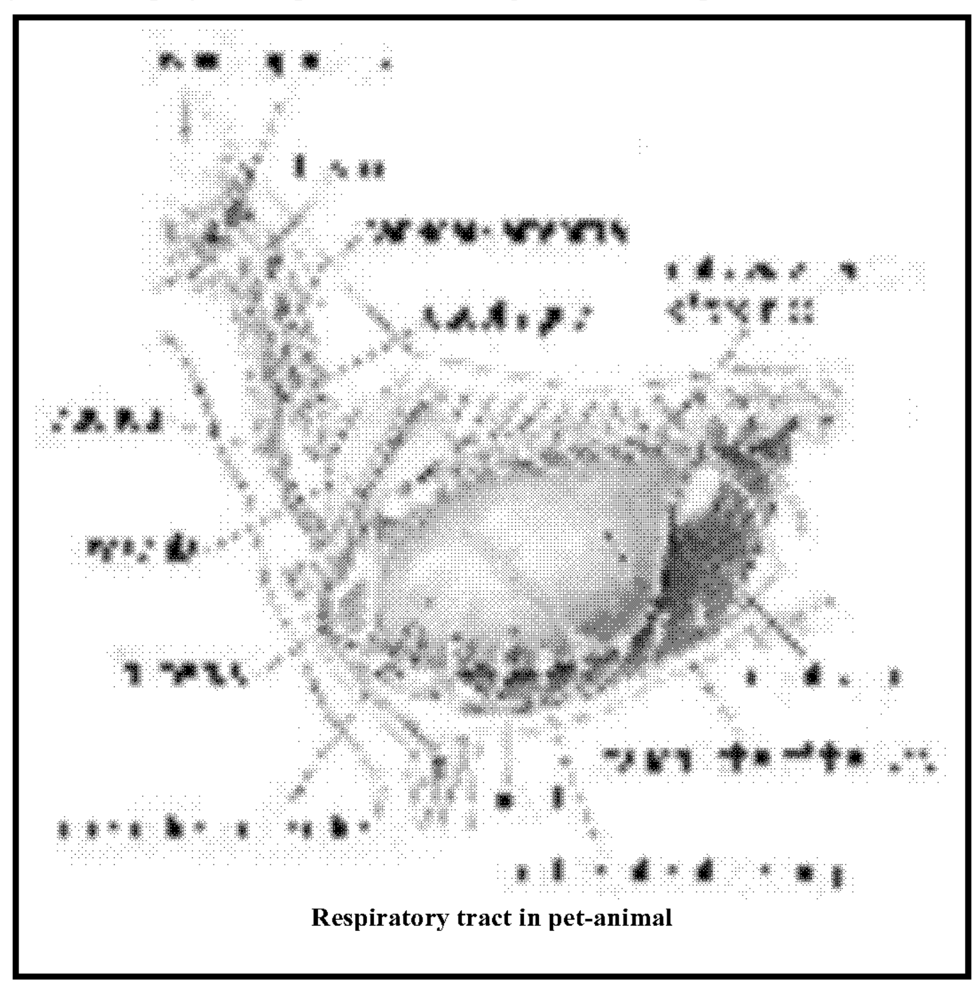


Radiographic Picture of the thorax in dog

Respiratory System In Dog And Cat

*The respiratory system is responsible for taking in oxygen and eliminating waste gases like carbon dioxide.

*Because dogs and cats do not sweat through the skin, the respiratory system also plays an important role in regulation of temperature.



Respiratory tract in pet-animal

Taking Of History Of Respiratory Disease:-

*When you have a pet animal suffering from respiratory disease in your clinic you have to ask about the following questions to take a good point of view about your patient:-

1-Your pet gasps and wheezes even when he is awake?

2-The snoring is worse during pollen season?

3-Your pet is overweight?

4-Your pet's voice has recently changed. ?

5-Your pet is panting excessively?

6-Your dog or cat is coughing, wheezing, sneezing, or gagging?

7-Exercise makes him unusually tired or causes him to cough or wheeze?

8-Your pet has recently begun snoring, wheezing, or panting at night?

9-He is breathing rapidly or taking shallow breaths?

10-His belly is heaving when he breathes?

11-His nose is dry, crusty, or bleeding?

12-There is a discharge from his mouth or nose for two days or longer?

13-Your pet's tongue or gums are blue or pale?

General Symptoms Of Respiratory Diseases (Inspection):-

*Coughing *Wheezing * Sneezing *Polypnoea

*Yellow/Green sputum * Fever *Dyspnoea

* Lethargy * Loss of appetite *Nasal discharges

*Abnormal rate, type, depth or rhythm of respiration.

*Cyanosis in the visible mucous membrane.

Methods of examination of the respiratory system:

(I)-Manifestations of respiratory disorders or inspection of the respiratory system or history of the respiratory system.

(II)-Physical examination of the compartments of respiratory system.

A- Nasal region and paranasal sinuses.

B- Larynx, pharynx and trachea.

C- Chest or lung and pleura.

(III)-Especial methods of examination.

(I)-Manifestations of respiratory disorders

1-Dyspnoea:

Definition: Dyspnoea means that difficult in respiration and it may be physiologically after strenuous exercise when hyperpnoea fail to meet the demand of the oxygen of the animal, but dyspnoea may be due to diseases as association between hypercapnia and hypoxia (increase the carbon dioxide tension in the blood and failure of tissue oxygenation).

Types:

A-Inspiratory dyspnoea:

*This type of dyspnoea which associated with difficulty in inspiratory phase.

*It is characteristic to the diseases that leading to inhibition the entrance of the air to the lung or transfer the oxygen to the blood in the tissue.

***Sings of inspiratory dyspnoea:**

-Dilated nostrils. -Prolonged inspiration.

-Depression in the intercostals spaces.

-Extension of the head and neck.

-Rotation of the elbow outwardly.

***Examples of inspiratory dyspnoea:**

-Ruptured diaphragm. -Bronchopneumonia.

-Pulmonary edema. -Canine distemper.

-Obstruction of the upper respiratory tract. -Tracheal collapse.

B-Expiratory dyspnoea:

*It is the type of dyspnoea which associated with difficulty in expiration.

*It is usually associated with the diseases which characterized by hindrance the expulsion of the air from the lung or reduction in the lung elasticity.

***Signs of expiratory dyspnoea:**

-Forced or prolonged expiration. -Pumping of the anus.

-Second lifting contraction of the abdominal muscles.

***Examples of expiratory dyspnoea:**

-Pulmonary emphysema. -Pleural effusion.

C-Undetermined or mixed dyspnoea:

-It is the type of dyspnoea which associated with difficulty in both inspiration and expiration (external respiration) or in oxygen transfer to the blood or tissues (internal respiration).

***Examples of mixed dyspnoea:**

-Anemia. -Pneumonia. -Cardiac diseases.

-Acidosis. -Brain diseases.

2-Cough:

*Cough means that it is deep inspiration followed by forced expiration due to presence of irritant materials or foreign bodies on the mucosa of the respiratory tract (larynx, pharynx, ……etc) or esophagus as in case of choke.

*It is considered as a sign of respiratory or cardiovascular diseases

Types of cough:

(I)-Paroxysmal Cough:

*Paroxysmal cough means that many times of cough following one after another.

***Examples of paroxysmal cough:**

-Catarrhal laryngitis or pharyngitis. -Parasitic bronchitis.

(II)-Dry or unproductive cough:

*It is the cough which not accompanied by sputum exudates or inflammatory fluid in large amount.

***Example of dry cough:**

-Parasitic bronchitis. -Interstitial pneumonia.

(III)-Frequent cough:

*It is the cough which occurred more than one time ad spontaneously.

***Examples of frequent cough:**

-Interstitial pneumonia. -Bronchitis.

(IV)-Moist or productive cough:

*It the cough which accompanied with sputum or exudates which can be detected by that the animal show the signs of swallowing after cough or presence of nasal discharges in most cases or presence of sputum in the house of the animal.

***Examples of moist cough:**

-Chronic cough or bronchitis. -Laryngitis. -Bacterial pneumonia.

(V)-Painful cough:

*It is the cough which associated with the signs of chest pain as grunting on the teeth or extension of the head and neck.

***Examples of painful cough:**

-Acute pleurisy. -Fractured rib.

-Acute bronchitis. -Severe bronchopneumonia.

NB. Cough can be induced by digital pressure on the tracheal ring or in-between the larynx and trachea.

3-Nasal discharge (ND):

*Nasal discharge may be originated from nasal cavity, trachea, bronchi, lung or pharynx.

*ND may be unilateral as in case of unilateral affection of the nasal cavity or it may be bilateral as in case of pneumonia and rhinitis.

***The nature of the nasal discharge may be as the following:**

1-Serous,clear and watery as in case of acute nasal catarrhal inflammation.

2-Thicker and greenish yellow as in case of chronic inflammation of the respiratory tract.

3-Purulent nasal discharge as in case of chronic naso-pharynx inflammation or as in case of accumulation of the discharge in the nasal cavity which may lead to blocking of the Eustachian tube and this make the dog shakes its head continuously.

4-ND may be appeared after sever cough, this indicated that the nasal discharge is originated form the deep respiratory tract as in case of sever pneumonia or bronchitis.

5-Feted audore discharges as in case of gangrenous pneumonia or accumulation of the nasal discharge in the nasal cavity or canine distemper.

6-ND may be tinged with blood as in case of epistaxis (will be discussed latter).

7-ND may be scanty as in case of chronic inflammation of the respiratory tract or it may be copious as in case of acute inflammation of the respiratory tract.

8-It may be continuous after lowering the head as in case of para-nasal sinuses affection as in case of sinusitis or it may be appeared in spontaneous form as in case of ruptured abscess in the nasal cavity or upper respiratory tract.

9-ND may be contain gas bubbles and this bubbles may be small which indicate that the nasal discharge originated from the lower respiratory tract (lung or bronchioles) or the gas bubbles may be coarse which indicated that the nasal discharge originated from the upper respiratory tract (nasal cavity or pharynx).

4-Epistaxis:

*Epistaxis means that bleeding from the nostrils and it may be bi or unilateral according to the etiology.

***Examples of epistaxis:**

-Traumatic or accidental causes. -Anthrax or Distemper.

-Neoplasm in the nasal cavity. -High blood pressure.

-Acute congestive heart failure.

5-Sneezing:

*Sneezing is a sudden noisy, and forced expiration produced reflexly by irritation of the nasal mucosa these irritation leading to stimulation of the afferent sensory nerve ending of the olfactory and facial nerve leading to sneezing.

***Examples of sneezing:**

-Rhinitis -Nasal solar dermatitis

-Inhalation of irritant materials or smokes

-Penumonysus caninum or linqutula serrata infection in dog and cats.

6-Respiratory sounds or stridors:

*In certain diseases of the respiratory system may be associated with abnormal audible sounds (stridores) and these sounds may be stenotic sounds when there is constriction in the respiratory passage and it is manifested in the following forms:

****Roaring or whistling stenotic sounds:***

-As in case of paralysis in the larynx or soft palate or in case of fractured nasal bones.

-In case laryngeal paralysis the roaring sound commence with the inspiration only.

-In case of soft palate paralysis the roaring sound commences with the expiration only.

-In case of fractured nasal bones the roaring sound commences with both inspiration and expiration.

Snuffling or rottling or bubbling sounds:

-This sound occurred when there is accumulation of discharges in the nasal cavity, larynx or trachea.

-It can be detected in case of laryngitis or tracheaitis.

NB: -When the stenosis is unilateral the sound is very clear when the healthy side is occluded and disappeared when the affected side is occluded.

-Wheezing or snoring sound is normal is some dog or cat breeds as a result of elongated uvula.

7-Movement of the nostrils:

*Normally the nostrils are movable by voluntary movement in most animals but involuntary movement of the nostrils is characteristic in case of inspiratory dyspnoea due to chronic obstructive pulmonary diseases as in case of: 1- Pneumonia 2- Hydrothorax 3- Chronic bronchitis 4- Laryngeal edema.

Physical examination of the respiratory system

*Physical examination of the respiratory system includes:

-Examination of the nasal region and paranasal sinuses.

-Examination of the larynx, pharynx and trachea.

-Examination of the chest (lung and pleura).

(A)-Examination of the nasal region and paranasal sinuses:

*Examination of the nasal region and paranasal sinuses includes the following points:

1-Tissues surrounding the nasal region to detect any abnormal lesions as ulcers or wounds.

2-Expired air. 3-Examination of the paranasal sinuses.

4-Respiratory stridores. 5-Sneezing.

6-Nasal discharges. 7-Movement of the nostrils.

8-Epistaxis.

(1)-Expired air:

*Expired air can be examined by holding the hand in front of the nostrils we can found that the strength of the air is equal from both nostrils in normal animal, if the air flow is unequal this indicates to stenosis in the upper respiratory tract specially nasal cavity.

*In certain diseases the expired air has offensive audore as in case of:

-Dental caries. -Gangrenous pneumonia. -Untreated case of stomatitis.

-Accumulation of nasal discharges in the nasal cavity.

-Expired air may have the urinefrous adore as in case of renal failure or uremia.

(2)Examination of paranasal sinuses:

*The important sinuses which can be examined in dog are frontal sinus (lies above the line joint between the eyes) and maxillary sinus (lies in-between the eyes and zygomatic ridge) which in cat there is frontal sinus only.

*Paranasal sinuses can be examined by:

(I)-Inspection:

* To detect any abnormal swelling or depression on the area of the sinuses which may indicated to either inflammation or fractures.

(II)-Palpation:

*In case of acute inflammation there is swelling and hotness.

*In case of chronic empyemia there is softness in the bones.

(III)-Percussion:

*On finger percussion the normal percussion sound is ***tympanic*** sound.

*In case of empyemia or paranasal sinusitis the percussion becomes dull.

NB:-The paranasal sinuses can be examined by radiography, trephining or sinoscopy.

-Cat has only frontal sinus and not has the maxillary one.

***Complications of paranasal sinusitis:**

-Dental fistula. -Inflammation of nasolacrimal ducts.

-Interfering with mastication.

-Stenotic respiratory sound and nasal discharges.

(3)-Examination of the larynx, pharynx and trachea:

*Upper respiratory tract can be examined by:

External method including:

-Inspection -Palpation -Auscultation

Internal or special method including:

-Endoscope. -Tracheal swap. -X-rays examination.

**External method including:*

(I)-Inspection:

*We can make inspection of the area of throat to detect any abnormal swellings or structures.

*Abnormal swelling as in case of goiter, laryngitis, laryngeal edema or enlargement in the regional lymph nodes.

(II)-Palpation:

*Palpation of the area of throat occurred to detect the nature (inflammatory or non-inflammatory) and the locations (either in the larynx, trachea, esophagus or lymph nodes or in thyroid gland) of the abnormal swelling either it is hot palpation (inflammatory lesions as in case of laryngitis or tracheatitis) or cold (non-inflammatory as in case of goiter or choke or edema).

(III)-Auscultation:

*The normal sound of auscultation of the area of throat is similar to "CH" sound.

*In case of tracheaitis there is stenotic sound.

*Harsh sound in case of bronchitis or laryngitis.

*Internal or special method including:

*Internal examination of the upper respiratory tract can be occurred by using of laryngoscope to examine the internal mucous membrane of the tumor) or lesions (inflammation).

(4)-Examination of the chest (lung and pleura):

(I)-Inspection:

*Inspection of the chest to detect any abnormal characters of the respiration in the pet animal either in the respiratory rate, depth, type and rhythm as mentioned before in clinical examination of respiration.

(II)-Palpation:

*Palpation of the chest normally occurred in the intercostals spaces to detect the existence of pain as in case of pleurisy or fractured rib.

(III)-Percussion:

*Area of percussion and auscultation of the chest as mentioned before.

*Normal percussion of the lung is "Resonant sound" due to percussion over gas containing organ (lung).

Abnormal lung sound by percussion:

1-Hyper-resonante sound:-

*The resonant sound is exaggerated when there is excessive amount of air in the lung or chest as in case of:

-Pulmonary emphysema. -Pneumothorax

2-Tympanic sound:

*These sound is noted over area of the lung that contains air and surrounded by solidified tissues or exudates as in case of:

* Fibrinous pneumonia * S/C emphysema

3-Dull sound:

*This sound is heard when there is no air or gases beneath the percussed area or when the density of the lung tissues in increased as in case of:

-Hydrothorax - TB - Haemothorax

*-Pulmonary neoplasm or abscess -Consolidation of the lung

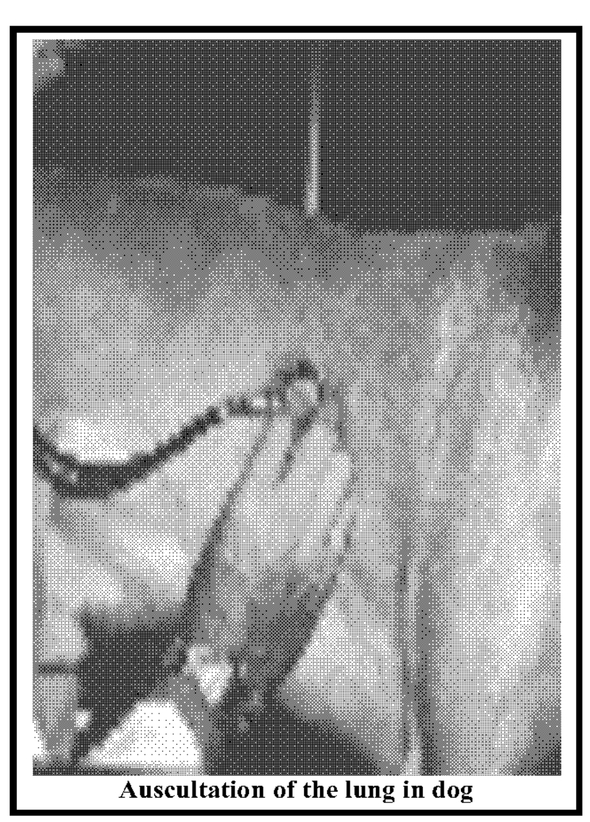
NB:

*Percussion of the lung may be associated with pain or cough as in case of pleurisy, fractured rib or bronchitis.

(IV)-Auscultation:

*Normal sound by auscultation of the lung is "vesicular sound" which resembling the ***V*** sound (with the inspiration) and ***F*** sound (with the expiration).

*Normal respiratory sound heard throughout the respiratory area except in the part where it is masked by the bronchial sound (CH sound) at the level of 4^{th} to 5^{th} thoracic vertebrae.



Auscultation of the lung in dog

Abnormal Respiratory sounds by Auscultation:-

A-Moist rales: The sound similar sound which produced as a result of passing of stream of air through narrow tube under surface of water (Bubbling sound). as in case of :-* Bronchitis. * Pulmonary odema.
* Pulmonary haemorrhage. * Bronchopneumonia. *Aspiration pneumonia

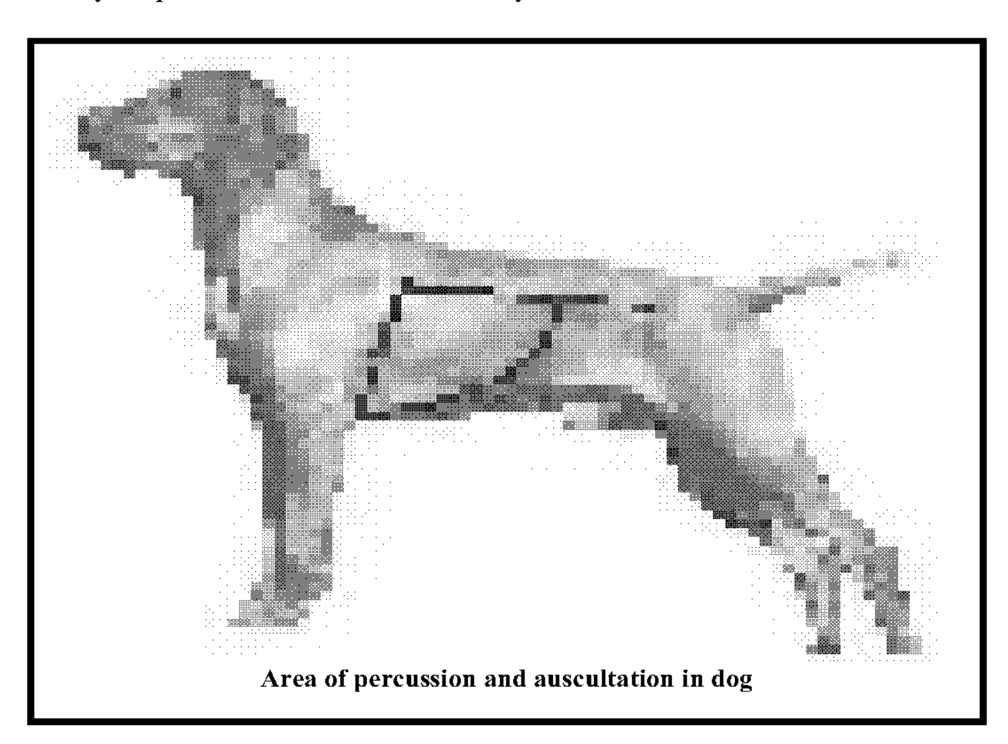
B-Dry rales: -Similar to the sound which produced due to separation of two moisted finger from each other or rubbing a taft of hair which held between the fingers close to the ears. As in case of :-

*Early stage of bronchitis due to congestion. *Pulmonary neoplasm.

*Chronic bronchitis due to excessive exudation.

*Spasm of bronchial muscles as in case of tetanus..

* ***C-Frictional or pleuretic sound*** Similar to the sound that produced by rubbing of dry two pieces of leather or scratching of ear by finger nails and it may be present in case of:- *Pleurisy *Pericarditis



Area of percussion and auscultation in dog

Examination of Skin In dog & Cat

A- Taking of history and animal description:-

Complete history about the diseased animal as well as description of the animal which includes age, breed and sex are very important for obtaining of good diagnosis as there are many diseases varies according to the sex, age and breed a of dog and cat.

B-Physical Examination of the skin:-

(I)-Inspection of the animal:-

*Animal should be examined in a good light area as there are many diseases or skin lesion can be detected and are clearly visible and can be diagnosed by systemic inspection or observation of the animal as in case of scabies or mange.

*Inspection of the animal is very important to detect the following points:-

1- The animal fat or thin?

2- The lesions are localized or generalized?

3- The lesions are bi or unilateral?

4- The animal appeared in a good health condition or no?

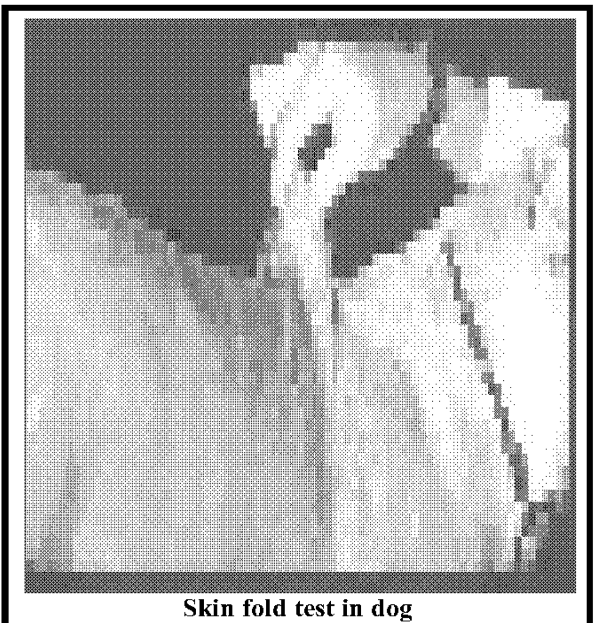
And to answer of these questions the animal should be closely examined.

(II)-Palpation of the skin:-

*Palpation is the most satisfactory method of examination of the skin to detect:-

1-Texture of the hair either it is coarse, fine, dry, oily or it is epilated easily or no.

2-Elasticity and thickness and skin temperature and we can make the skin fold test to detect the degree of dehydration also


Skin fold test in dog

3-Nature of the skin lesions which may be

A- Primary skin lesions as: - *Macul. Papule, Nodule, Pustule, Tumor, Vesicle and wheal.

B- Secondary skin lesions as :-

*Scale, Crust, Scar, Ulcer, erosions, Fissure, Hypo or hyper pigmentation, Callus or Hyperkeratosis.

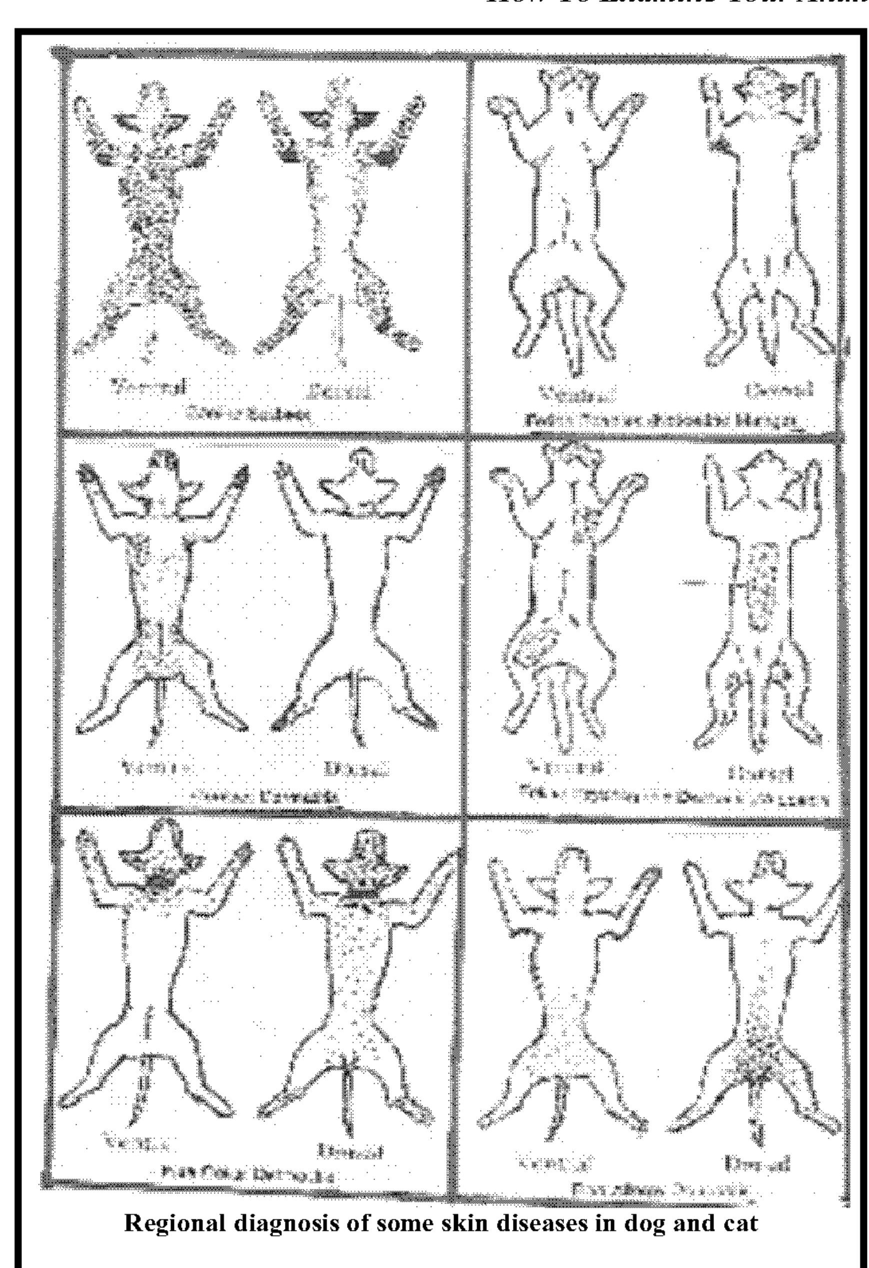
(III)-Regional Diagnosis:-

*Regional diagnosis is very important to detect the nature and the type of affections as there are many diseases have certain regions of the body as well as have certain manner of distribution so regional diagnosis may help us for detection many diseases

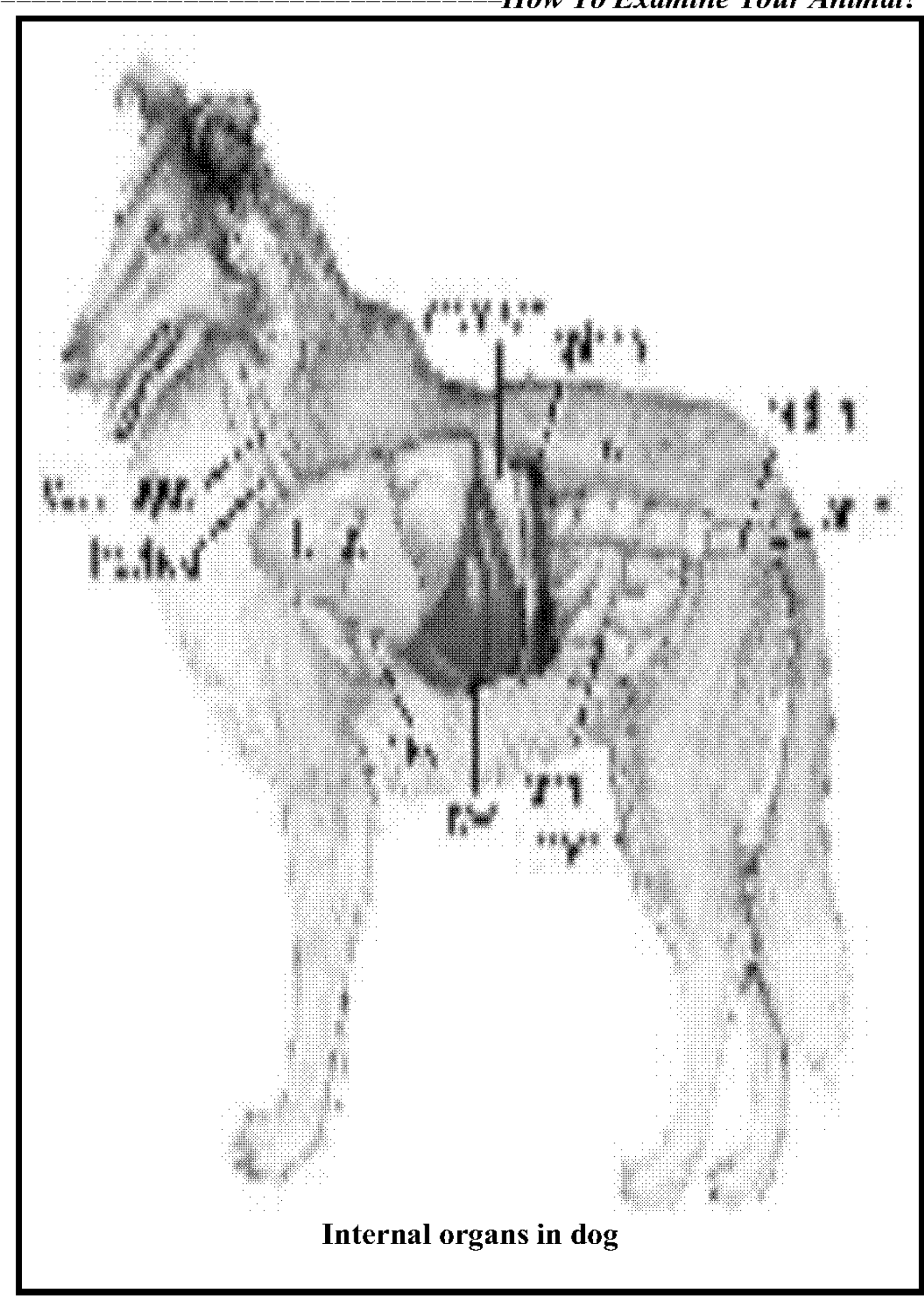
*The following table and figures show some of diseases according to the affected region and according to the manner of distribution the diseases.

Body Region	Suspected diseases
1-Head	Dermatophytosisi - Food allergy Systemic lupus erythromatosus Scabies -Dermatitis - Facial fold dermatitis Zinc responsive dermatosis
2-Ear	Alopecia -Fly dermatitis Otitis externa -solar dermatitis -Scabies
3-Nasal Area	Contacte dermatitis - Dermatophytosis Nasal pyoderma -solar dermatitis -Scabies
4-Lips and Chin	Acne -Contacte dermatitis Oral papliomatosis - Ulcers
5-Neck	Contacte dermatitis (collar) -Flea allergic dermatitis Flea collar dermatitis
6-Back	Calcinosis cutis -Flea allergic dermatitis Hyperadrenocorticism (Cushon´s syndrome) Alopecia -Dermatitis
7-Anus	Anal sac dermatitis Perianal odema or fistula
8-Trunk	Generalizad dermatosis -Floculitis Hypothyrodism -Hyperadrenocorticism
9-Abdomen	Contacte dermatitis (venteral abdomen) Endocrine alopecia -Floculitis Hyperadrenocorticism (Cushon´s syndrome) Psychogenic dermatitis Superficial pustular pyoderma(impetigo)
10-Tail	Acute moist dermatitis -Endocrine alopecia Flea allergy dermatitis - Mechanical irritation
11-Legs and feet	Contacte dermatitis -Scabies Digital pad hyperkeratosis -Dermatophytosis Interdigital lesions or foreign bodies

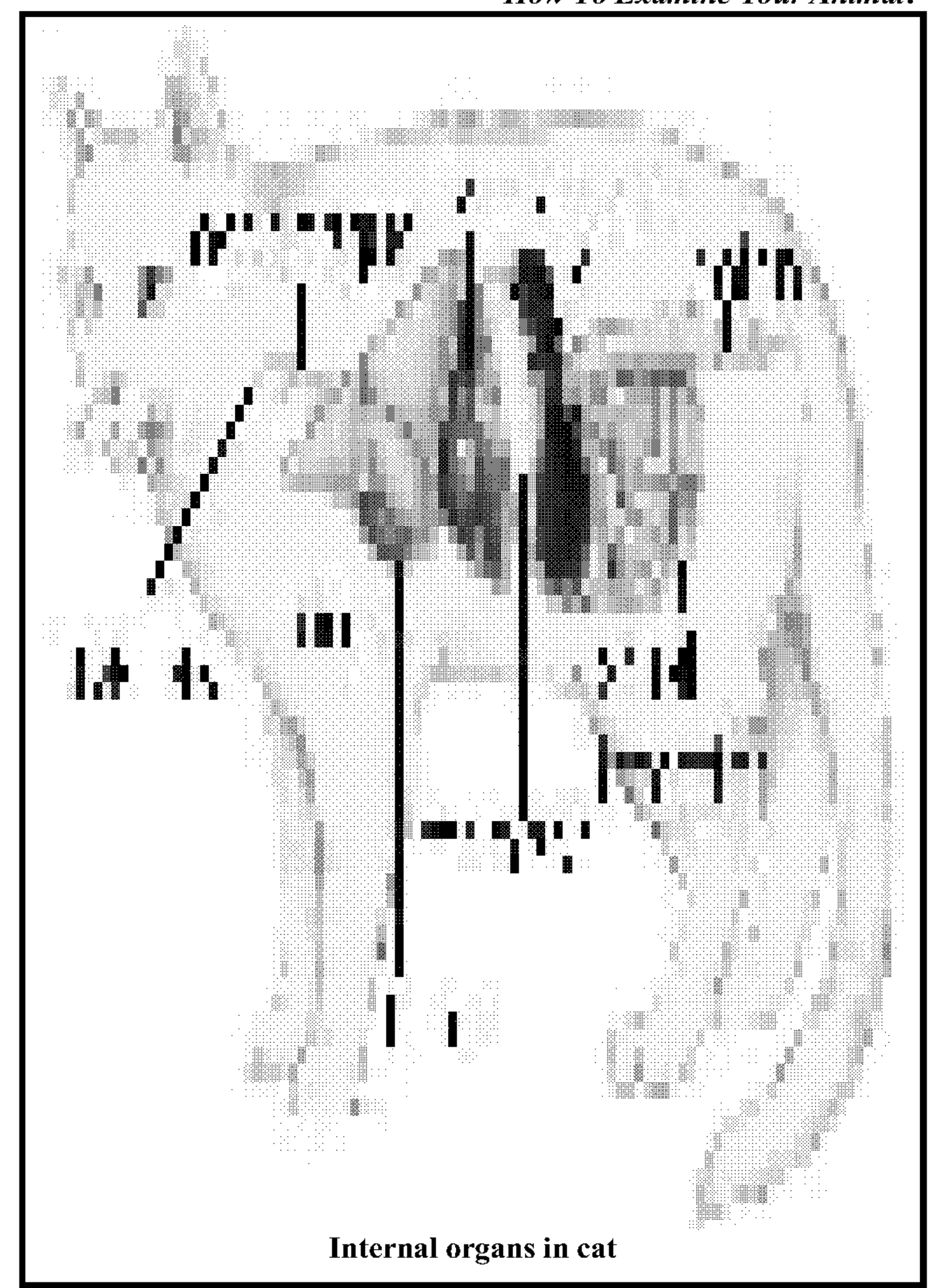
*Regional diagnosis is shown in the following figures which indicate the most common area or regions affected by the most common suspected skin diseases in dog and cat either in the back (dorsal view) or in the abdomen(ventral view).



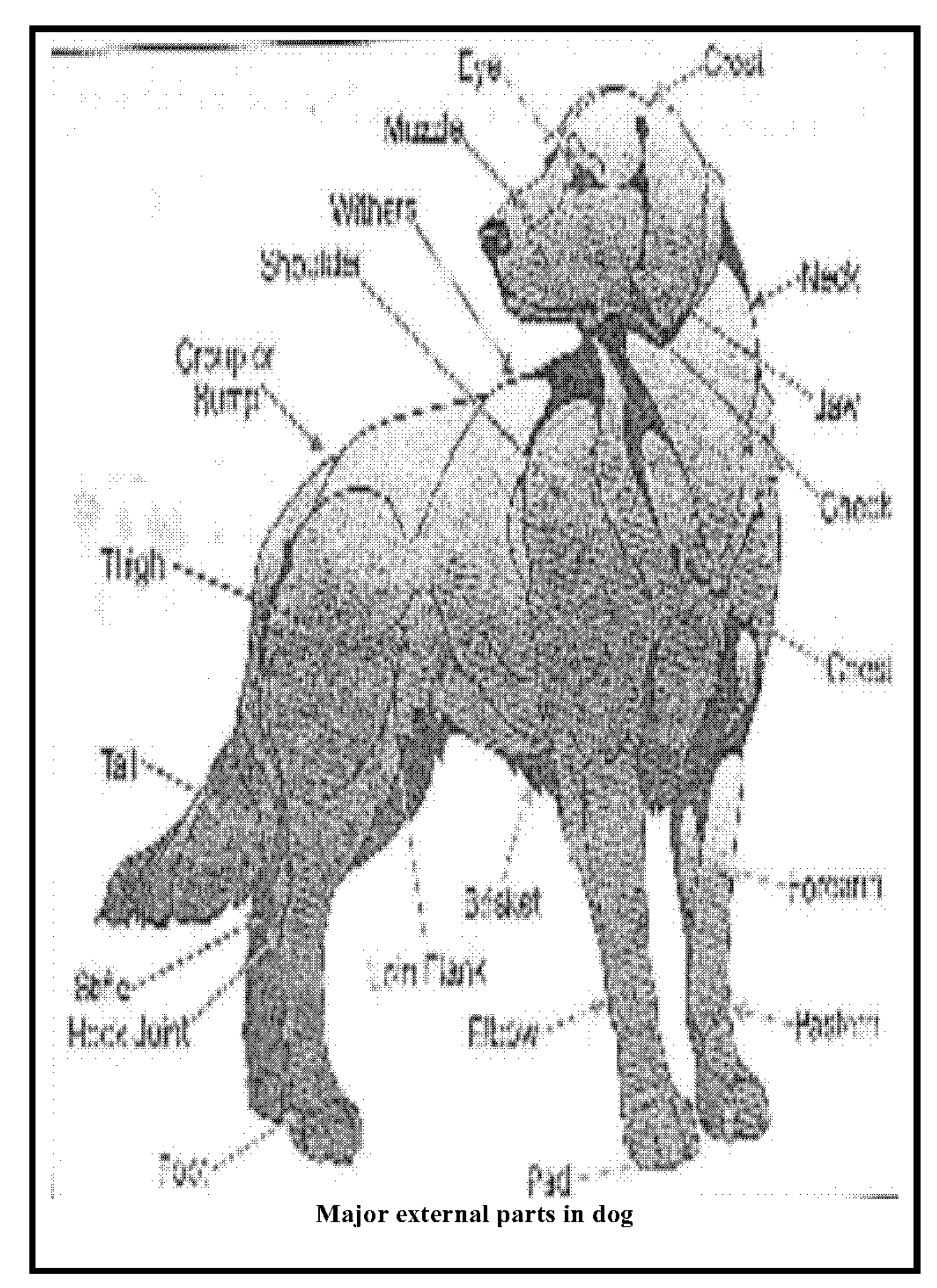
Regional diagnosis of some skin diseases in dog and cat



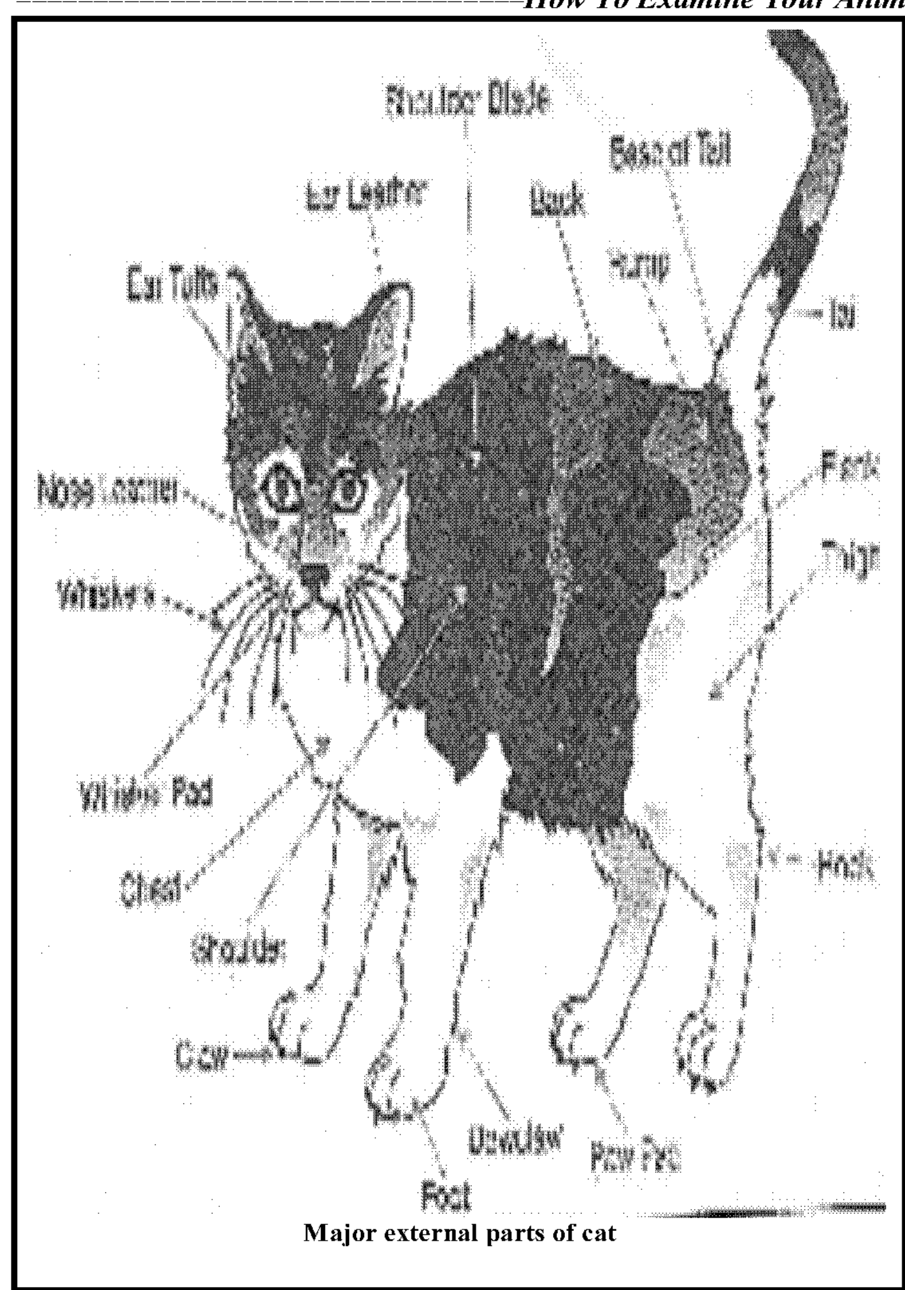
Internal organs in dog



Internal organs in cat



Major external parts in dog



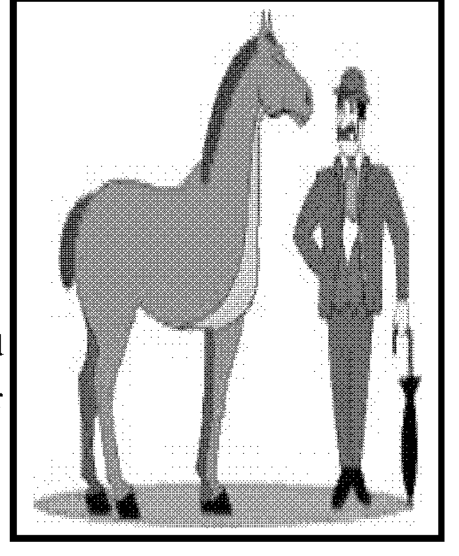
Major external parts of cat

Chapter No. (3)

How To



Examine Your Equine?



Aimes of breeding of horses

In our Country horses are used for:

1- Horsemanship. 2- Transportation.

3- Racing and drought.

Some breeds of horses :-

1-Arabian 2- thoroughbred

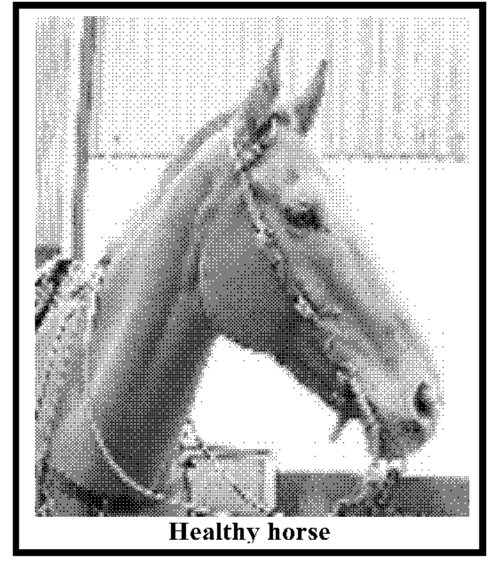
3- American saddle 4- Slandered breed

5-Tennessee 6- American quarter

7- Morgan 8-Hackney

9- Pinto 10- Appaloosa

Signs of Health of Horse:-



Healthy horse

1-Good appetite and the digestive system work well.

2-When food is available the animal eat well, the horse prefers to eat little and it's normal for the horse at grass to graze intermittently day and night

3- Alert ,bright and perceptive appearance.

4-Urination:-

A-Horse usually urinate at rest

B-Both male and female adopted a similar characteristic posture, which achieved by extending both hind legs and then lowering the back, there by

increasing the intraabdominal pressure which assisted by the animal making an inspiration and holding it's breath which is slowly released producing groaning sound.

C-Male may protrude the penis outside the prepuce

5-The eyes must be opened widely and free from any discharge

6-The nostrils must be dry and free from discharge.

7-The horse grow well and fit for work to which it's accustoms

8-skin is elastic and shiny and free from any lesion or parasites

9-Foal is difficult to be cached

10-Normally the horse remains standing during the day or standing on three legs and on the toe of the fourth leg in resting time in alternative manner.

***-Dung (faeces of horse):-]**

A-Dung should be green-brown to golden brown according to the type and system of feeding

B-The dung is in the form of moist balls that broken slightly on hitting the ground. C-Pass without tensmus or straining

11- Mobile ears 12- No vices (bad habits).

13-Respiratory and pulse rates are normal.

14-Normal prehension: the horse hold up and introducing the food in the mouth

15-Laying down beginning by bending the forelimbs firstly and rest on the breast bone [sternum] and change to other side by rolling and raising their legs upward. 16-Hooves are smooth and free from any discharges or crakes

Some Feeding Practice :-

1-Generally horse prefers the food or ration which based on roughage
2-The food must be free from moulds or taint

3-Horse not like sudden change in the diet specially the roughage part

4-The digestive tract of the horse is designed for small intake at frequent intervals.

5-Cereal-based foods tend to form mass like bread dough, which the digestive juice has difficulty to penetrate it and causing digestive problems.

6-Digestion is more efficient if cereals are mixed with roughage.

7-Water should be available fresh and clear.

8-Horse likes other any animals, digest and utilize feed as carbohydrates, proteins ……etc., and the specific requirements of such elements depend on the amount of work, age and production demanded of the horses.

Approach to your horse and methods of injections:-

* Be careful when approaching a horse especially when it is preoccupied, such as when its head is in a hay manger.

*When approaching a horse in a stall, speak to the horse to get its attention and wait until it turns and faces you before entering.

*Make sure the horse moves over before you walk in beside it.

*Speak to your horse and keep your hands on it when moving around the horse. *When approaching from the rear, advance at an angle speaking to the horse, making sure you have its attention.

*Touch the horse gently as you pass by its hindquarters.

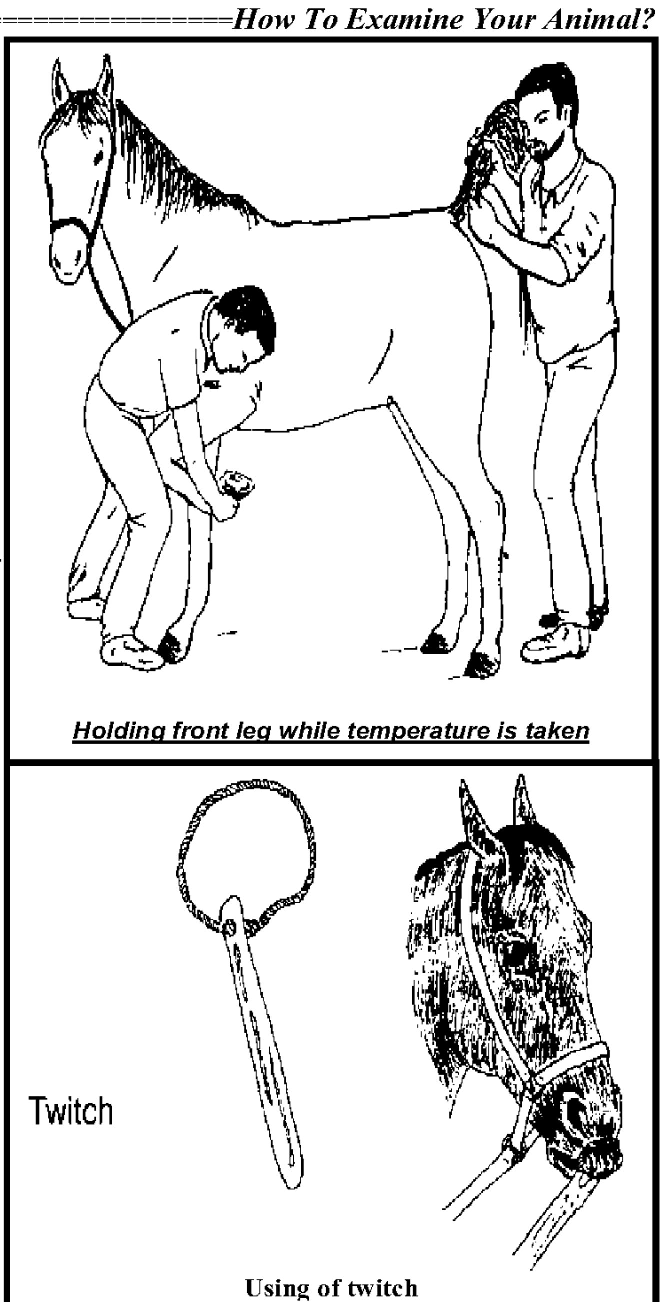
*Handling or Restraining of Horse

1-Approach to horse from the left side (near side)

2- Holding one of the fore limbs.

3- Holding a fold of the skin of the neck.

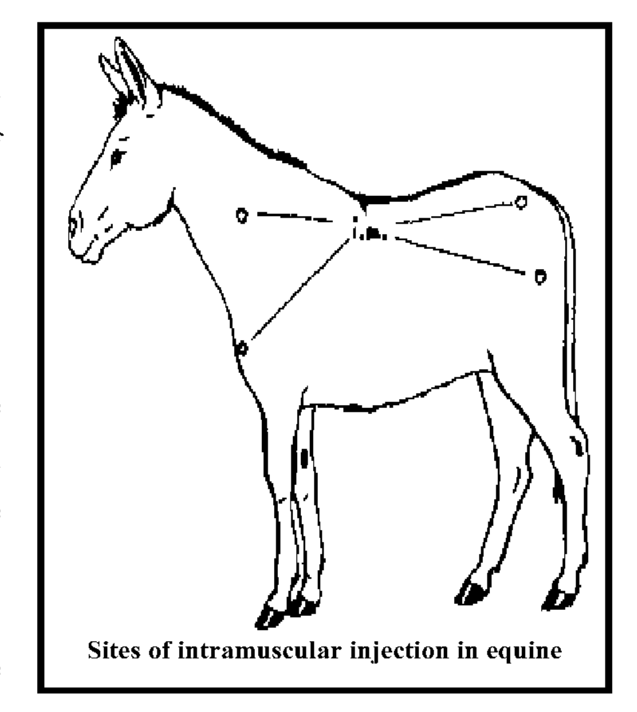
4-We can use muzzle twitch or ear twitch.



Holding front leg while temperature is taken

Using of twitch

(I)-Intramuscular injection:-It's preferred to inject in amass of muscles as:



Sites of intramuscular injection in equine

1- Hind quarter muscles
2- Brisket muscles.
3-Upper thigh muscles
2- Neck muscle [in the middle 1/3 to a void injection in the legamentum nuchae].
5-In young animals, triceps muscles may be used.

B-The site of injection should be cleaned or with clipped hair

C-Gauge 19 or 21 are preferred for I/M or S/C injection and gauge 16 or 19 for I/V injection.

D-Avoiding movement the needle after insertion in the muscles

E-If there is hemorrhage at the site of injection, other fresh site should be used.

(II)-***Subcutaneous injection***:-

*At the neck or shoulder area where the skin is flabby [application of cold packing at site of injection]

(III)-***Intravenous administration***:-

*Is made easily in the large Jugular vein.

-The thump should be pressed on the lower aspect of the Jugular furrow to raises the vein and then by using a disconnected hypodermic needle is inserted in the vein either by:-

-One quick direct motion -Slow gentle pressure through the tissue.

-To ensuring the needle is in the vein we found ejects of blood from the needle.

SOME ADVICES TO THE HORSES WONER:-

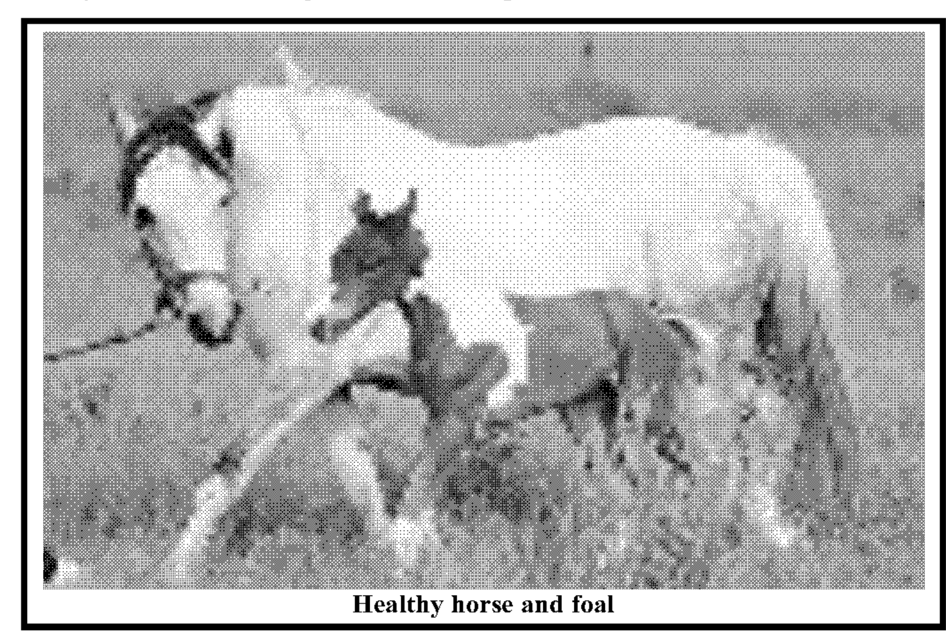
1-Good and safe shelter, fences and general surrounding.

2-A good balanced feeding program. 3- Frequent grooming.

4-Plenty of clear water. 5-Good foot care.

6-Routine worming, vaccination and dental care.

7- Plenty of clean bedding if the horse kept in a stall.



Healthy horse and foal

Equine Veterinary Clinical examination

Veterinary clincal examination includes :-

1-General inspection:-

*General inspection includes the following points:-

1-Posture of the horse 2-Gait and walking

3-General physical conditions 4-Tremors & Convulsoin

5-Behaviour & appearance 6-Skin

7-Defecation, ingestion & urination

2Taking of pulse, body temperature and respiration

3-Examination of (superficial lymph nodes- visible mucous membranes)

4-Examination of the Environment :-

-Soil -Housing & ventilation - Source of water and food

5-Taking of History (presente history- past history)

6-Physical examination of each system :- (palpation- percussion – Auscultation)

7-Laboratory tests : As (Blood, faecal and urine analysis-skin scraping test…etc.)

8-Special Methods :- -Electrocardiograph ECG -Stomach intubation

-Uretheral cathetarization -Endoscopy &ultrasonography.

-Allergic tests as Malline or tuberculine test

General Inspection Of Equine

(I)-Posture And Gait:

1-The animal may take "dog setting position" as in case of gastric dilatation .

2-The animal may rolling with paddling as in case of colic

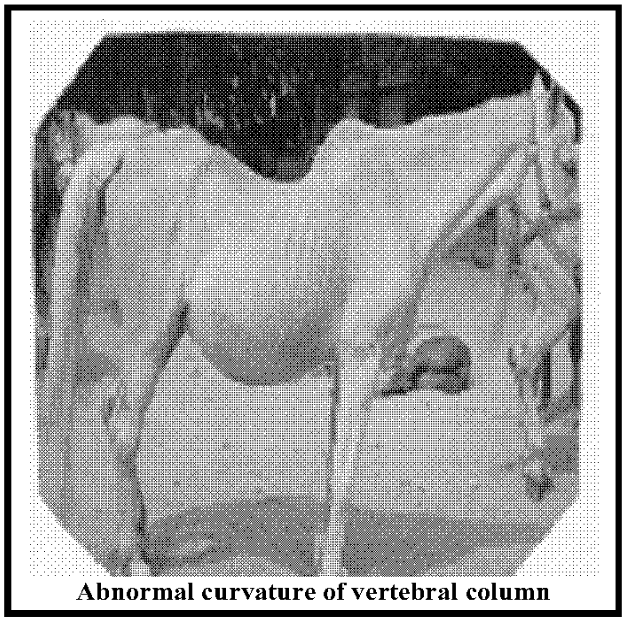
3-The animal may laying down and getting up frequently as in case of mesenteric colic [strongylus spp.]

4-Kicking of the abdomen as in case of abdominal pain

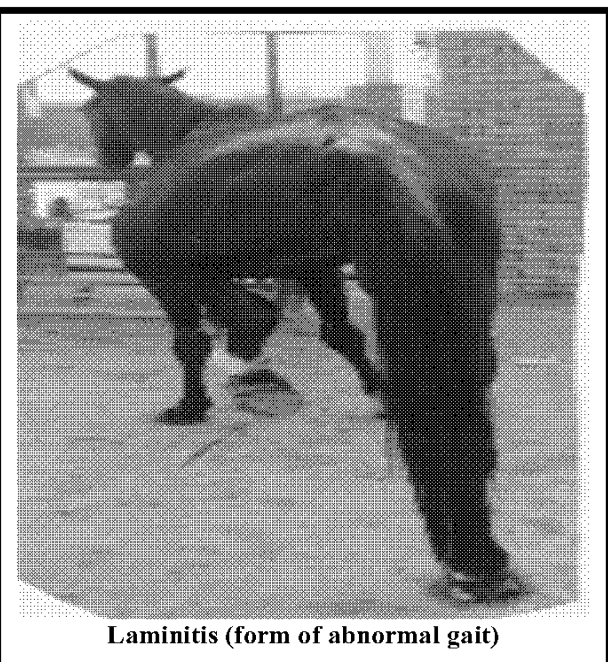
5-Arched back with abduction of hind legs as in case of urine retention

6-Stiffness in gait as in tetanus or lactating tetany.

7- Inability to stand on the hoove as in case of laminitis .



Abnormal curvature of vertebral column



Laminitis (form of abnormal gait)

8- Abnormal shape of the vertebral colume as congenital ventral deviation of the vertable colume .

(II)-Abnormal Behaviour

1-Constant pawing of the ground with extention of head and neck with nervous signs as in choke .

2-Lifting of foreleg, swishing the tail and lateral deviation of the head with anoxious facial expression is indicative of abdominal pain (Colic)

3-Vigrous licking of the skin as in case of external parasites

4-Dummy syndrom as in liver diseases

(III)-Tremors And Convulsons **:as in case of**

1-Azoturia (myoglobinuria) 2-lactation tetany in mare

3-Tetanus 4-Febrile conditions 5-Strychnin poisoning

(IV)-Abnormal Eating, Defecation or Urination

will be discussed in detailes in other sections.

(V)-Skin:

*We should make general inspection of the skin to detect any skin lesions (primary or secendary) , excessive sweating as in case of azoturia

-Presence of external parasites.

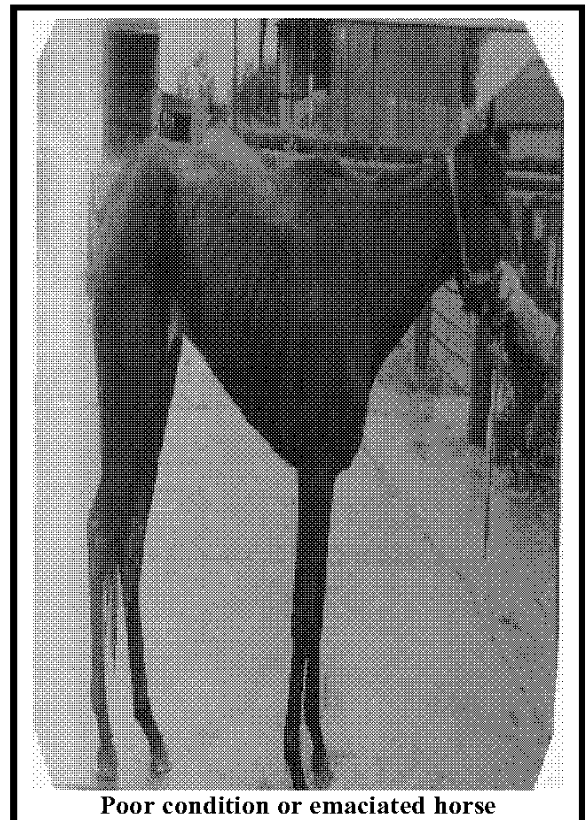
(VI)-Physical Conditions:-

-Horses can be classified physically into :-

A-Good physical conditioned animal :

Can be described when the boney prominants of the body are covered by

flesh or muscles that give the animal round appearance, this occurred when the animal take good quality and quantity ration and free from diseases.



Poor condition or emaciated horse

B-Bad or poor conditioned animal or emaciated animal

*Can be discribed when the boney promenants are not covered with flesh or muscles that give the animal woody appearance as in case of :

1-Dehydration.

2 –Starvation or sever entritis

3- Heavy infestation of parasites (internal or external)

4-CopD (chronic obstructive pulmonary disease)

C-Obesy or fate animal:-

*Can be described when it's obsity leads to hinderanse of walking (rare in animals)

Taking of History or Anamenesis

*it's the most important point or aspect of the examination and considered as the half of diagnosis, and it's taken from the owner or Housekeeper. History is divided into main two types:

A-Presente History

1-What's the first signs of the disease.?

2-How long the animal has been ill ?

3-State of appetite, defecation and respiration or urination?

4-Morbidity and mortality rate.

5-The animal is pregnant or not

6-Description of the animal which includes sex, age, breed.

B-Past History

1-Previous illeness, treatment, pregnancy or parturation.

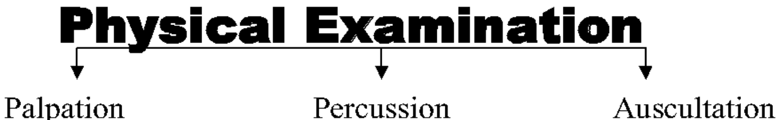
2-History of sudden death

3-Post- mortum signs of dead animal

4-Are there any newly purchased animals and it's healthy certificate

5-History of vaccination or prophylactic measurments

6-Sudden change in diet or seasonal change



(I)-Palpation:-

A-External palpation may be direct by using of hand or indirect by using of prob an in case of deep wound.

Types of palpation:-

1-Resilient : in which the organ returned to it's normal position after ceasing of finger pressure.

2-Doughy : as in odema of the skin or abscesses

3-Firim : lymph node [normally] or liver

4-Solid or hard: Bone

5-Emphysematous: s/c emphysema or. tympany

6-Flactuating : as in fluid filled bowel .

B-Internal palpation : As in case of rectal palpation to examine some internal organs as kidneys,caecum, uterus , aortic or mesenteric artery

(II)-Percussion

It may be direct by using fingers of both hands or indirecte by using of plate of wood [plexometer] and rubber hammar [plexor]

-Sounds of percussion:

1-Resonant (Ringing sound): normal percussion of the lung

2-Tympanic (Hyperresonant): As in tympanic or pulmonary emphysema

3-Dull: As normal percussion of the heart (Cardiac dullness) or pulmonary odema.

(III)-Auscultation **:** It occurred by using of stesthoscope and the sounds of auscultation vary according to the Auscultated organ:

Example: -Normal Auscultation of the heart is ***lupp dubb***

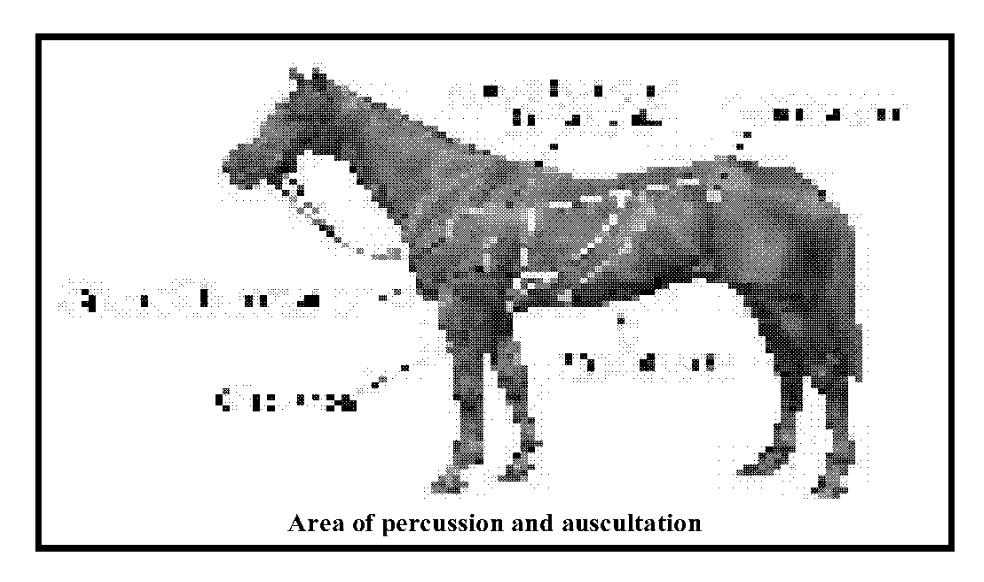
-Normal Auscultation of the lung is vesicular sound

-Area of percussion and auscullation of the lung in equine is a triangular area bounded by three lines:-

Dorsal line :- exteneded from the posterior angle of the scapula untile the last second intercostal space

Anterior line :- exteneded from the posterior angle of the scapula until the olocranon process.

Venteral line :- Join betwenn the anterior and dorsal lines and pass in the midline of the ribe number 11.



Area of percussion and auscultation

Body Temperature In Equine

*Taking of body temperature is one of the most important points during examination of the animal.

-Normal body temperature in adult animal is ranged from ***37.2-38*** **C°**

-Normal body temperature in young is ***37.6-38.6*** C°

Body temperature is taken by plunt pulb clinical thermometer from the rectum which normally gives the mentioned range before. Or from the

vagina in which the body temperature is normally exceed that of the rectum by 0.5C° or from the axilla in which the temperature is less than that of rectum by 1C°

Clinical Significance Of Body Temperature:

(I)-Hypothermia

Hypothermia means that lowering of body temperature than normal

Examples:1-Hypocalcaemia (lactating tetany) 2- Dehydration

3- Exposure to cold weather 4-Poor mangment of newly born foal

5-Prior to death except in tetanus

(II)-Hyper thermia:-Hyper thermia means that abnormal elevation of body temperature than normal level which usually due to physical or neurologic factors

Etiology:- 1-Physical agent as exposure to high environmental temperature specially with high humidity (Sun-stroke or Heat stasis) and this is predisposed by heavy coat or bad ventillated area.

2-Neurogenic hyperthermia due to damage of thermoregulatory center as in case of spontenous haemorrhage.

3-Some drugs as levamisol

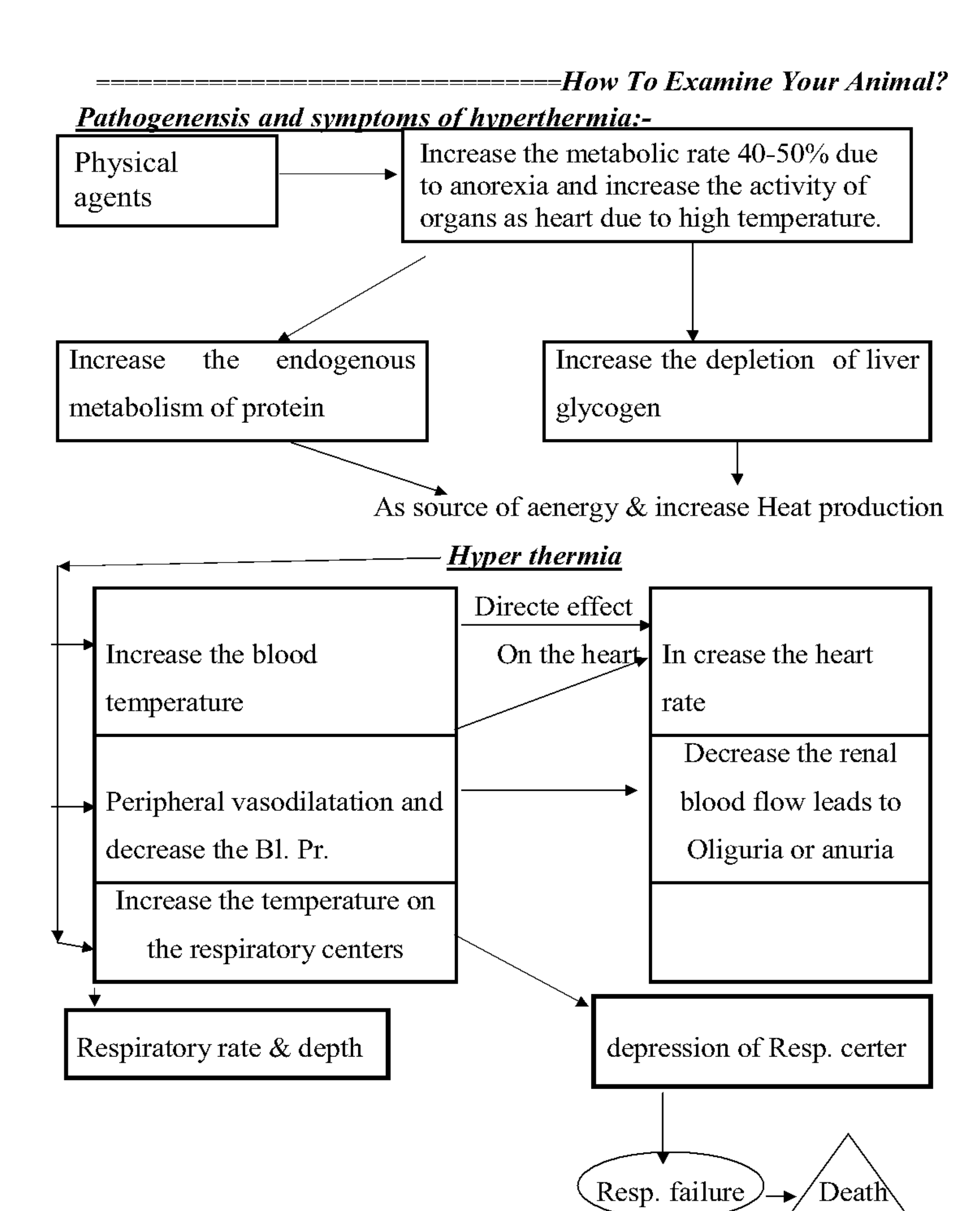
4-Iodism. [iodism→hyperthyrodism → ↑ BMR→↑heat production]

-If the temperature exceed the critical level it leads to deperssion of the CN.S activity with nervous manifestion. Or lead to myocaridial weakness and circulatory failure and Death.

Treatment :-1-Cold pack or bath and put the animal in shadow place.

2- Salicylic acid preparation or antipyretics.

3-Supportive treatment and fluid therapy.



Pathogenesis & symptoms of Hyperthermia

Fever (Pyrexia)

Fever means that abnormal elevation of body temperature than normal level which usually due to infection or chemical agent.

Etiology

1-Septic or in fectious causes due to bacterial, viral or protozoal infection.

2-Aseptic or chemical causes as in case of vaccination or allergic test as BCG against TB or malein test against glanders due to antigen antibody reaction

NB: Surgical operation or wounds may leads to Aseptic fever due to break down of the tissues.

Clinical symptoms

1-Abnormal elevation of body temperature than normal range.

2- Congested mucous membranes.

3- Accelerated pulse and respiratory rate.

4- Anorexia and dullness. With sweating

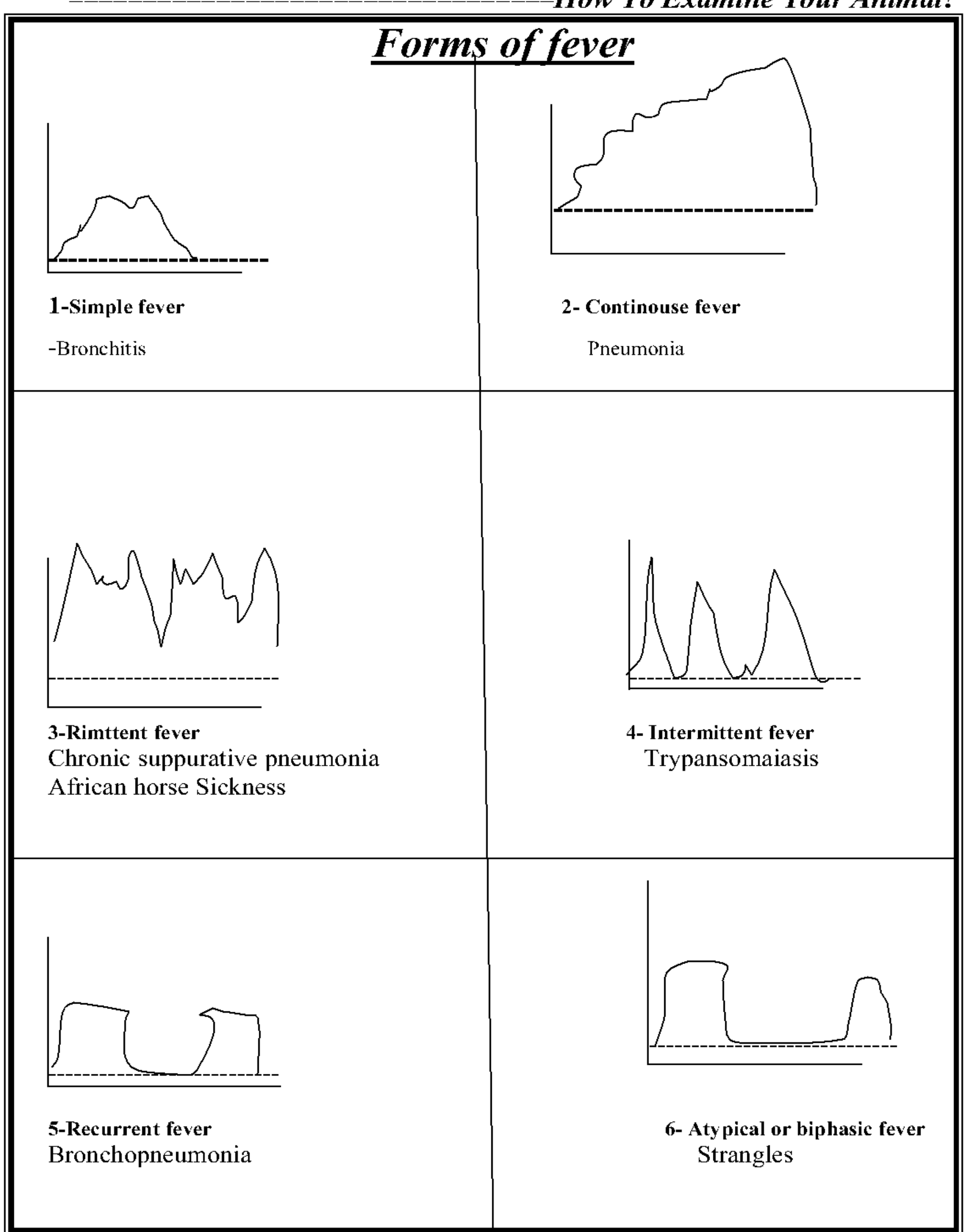
5- Other systemic disturbances according to affected system in case of infectious or septic type.

Stages of fever:

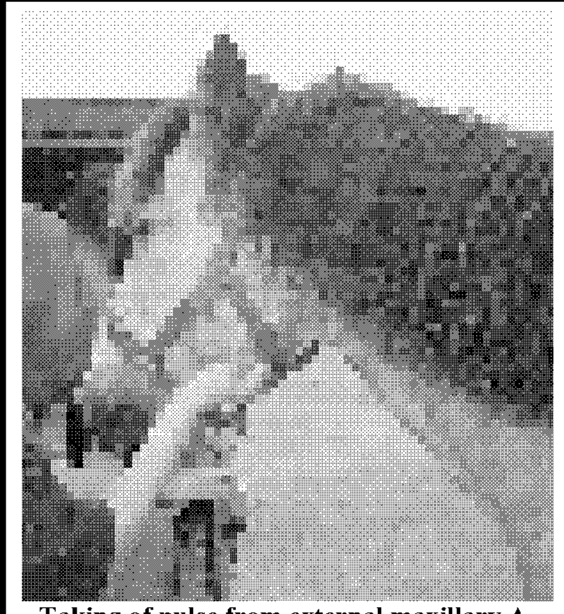
1-Increment stage:-Stage of beginning of elevation of body temperature than normal

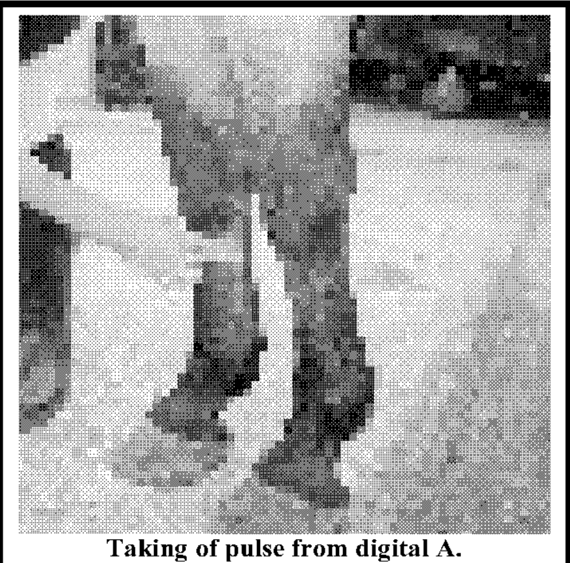
2-Fastigium or acme stage: it's the stage of maximum elevation of the body temperature or steady stage.

3-Decreament stage: it's the stage in which the body temperature is crisis or lyses to normal level


Forms of fever
1-Simple fever
-Bronchitis
2- Continouse fever
Pneumonia
3-Rimttent fever
Chronic suppurative pneumonia
African horse Sickness
4- Intermittent fever
Trypansomaiasis
5-Recurrent fever
Bronchopneumonia
6- Atypical or biphasic fever
Strangles

TAKING OF PULSE IN THE EQUINES


Taking of pulse from external maxillary A.


Taking of pulse from digital A.

1- Site: ***External maxillary artery***: in the medial aspect of the mandibule and just as it around externally or laterally it be come facial artery

Median artery : on the medial aspect of the upper extremity of the foreleg.

-Digital artery on the both side of fetlock joint

NB: Pulse should be taken from superficial medium sized artery and pass in neighborhood to solid structure as bone. If taking of pulse is not taken from artery because of generalized tremors, thickness of the skin……..etc. the heart beat by stethoscope can be taken as indicator to pulse rate. If necessary

2-Rate:

-In adult animal -- --------------------***28-40 pulse waves/ min***

-In young animal ----------------------***70-80 pulse waves/ min***

-In donkey-------------------- ----------***45-65 pulse waves/ min***

↑ The pulse rate (Tachycardia)	↓ The pulse rate (Bradycardia)
-All febrile conditions	-Hypothermia
- Hyperthermia	-Prior to death
-Colic	-Myocardial weakness
-Toxemia & septicemia	-Brain diseases
-Sever pneumonia	-Aged or senile animal
-Painful conditions	-Myocarditis
-Pericarditis	-Jaundice
-Endocarditis	-Gastric ulceration
-Anemia or hemorrhage	

3-Pulse rhythm:

*Pulse rhythm means that, the time interval between the pulse waves. It's regular in horse.

-Irregular pulse rhythm may be due to (Aged animal –myocarditis –valvular defects-convalescence stage of febrile disease).

4-Pulse Amplitude:

*Pulse amplitude means that, it's the degree of digital pressure that required obliterating the pulse waves- and it may be:

A-Increased pulse amplitude as in:-

-Vulvular stenosis - Ventricular hypertrophy

-Tetanus - Fever - Pulmonary diseases (pneumonia)

B-Decreased pulse amplitude as in

-Debelity - Anaemia and dehydration -Myocardial weakness

Jugular Vein Pulsation(JVP).

False: or physiological as in case of debility or this animal

True: or pathological as in case of pericarditis or tricuspid valve incontinences

*True and false jugular vein pulsation can be differentiated by digital obliteration of Jugular vein at the base of the neck

*If the pulse disappeared – true or pathological J.V.P

*If the pulse remain – false or physiological J.V.P

Examination Of Respiration In Equine

(I)-Type:

*The normal type is mainly ***costoabdominal***

*Abnormal types may be:

1-Wholy abdominal:-as in case of: - SDF. Pleurisy, sever pneumonia, and pericarditis

2-Wholy thoracic or costal as in case of: -

Colic, peritonitis and impacted caecum

3-Double expiratory effort: - -The first one is normally costoabdominal while the second one is wholy abdominal is charactristic to COPD (chronic obstructive pulmonary disease)

(II)-Rate:

-Normal respiratory rate:- 11-14 Respiratory cycles /min

(A)-Respiratory rate may be increased due to:

1-Physiological factors as: -Exercise –Fear and excitation

-Over load of the stomach specially in young animals

2-Pathological factors: - Pneumonia -Equine influenza.

-Dyspnoea - Fever -Colic

-The rate of respiration can be detected by observing the movement of the costal arch or nostrils or by Auscultation of lungs

(B)-Respiratory rate may be decreased as in case of:-

-Brain diseases -Uremia -Prior to death

(III)-Respiratory rhythm :-

-The normal respiratory rhythm in equine is regular

-Abnormal respiratory Rhythm may be:

1-Prolonged inspiration as in:-

-Stenosis of upper Respiratory tract -Pneumonia

–Strangles -Brain diseases –Glanders

2-Prolonged expiration as in:-

- Pulmonary emphysema (COPD) -Pulmonary edema

-Chronic interstitial pneumonia -Lung collapse

(IV)-Respiratory Depth or Amplitude:-

Means that, the strength of respiratory movement. It may be:

1-Increased or labored respiration or deep or hard respiration

As in: Bronchitis (dyspnoea) -Pneumonia -Low O2 -Exercise

2-Decreased or shallow Respiration as in case of:-

-Brain diseases -Rest respiration –Painful conditions

-Prior to death –Hypothermia

3-Asymmetrical respiration as in case of:-

- Unilateral affections of the chest. As unilateral Hydrothorax or Pneumonia

Examination Of Lymph Nodes In Equine

Lymph nodes that can be examined clinically are:-

***1-pre scapular lymph node*:** present in front of the scapula slightly dorsal to the shoulder Joint

2-pre crural or prefemorl lymph node: present in front of the femur slightly dorsal to the stifle joint

3-Superficial inguinal lymph node: present at the base of scrotum

4-Supra mammary L.n. present at the base of the udder

5-pharyngeal lymph node

A- Retro pharyngeal lymph node. Present posterior to the pharynx

B- Pare pharyngeal or sub-parotid lymph. Node present at the base of the ear beneath the parotid salivary gland. Not palpable in the horse.

6- Sub maxillary lymph node : present in the inner aspect of the mandible

Normal Characters Of Lymph Nodes

***1-Size*:** according to breed and age but generally it's larger in young animal than adult relatively

2-Surface: Smooth but may be lobulated if it's present in group as in sub-maxillary lymph node.

3-Skin & movement: The skin over the lymph node is movable and take the body temperature.

4-Consistency: firm on palpation

Abnormalities of Lymph nodes

The lymph node may be enlarged fluctuating in consistency hot and painful As in case of:

1-Glanders 2- Strangles 3-Lymphadenitis 4-Lymphosarcoma. 5-Anthrax

-Enlargement of the lymph node may lead to other disturbances as in case of enlargement of sub- mandibular lymph node due to glanders or strangles may load to dysphagia or dyspnoea.

Enlargement of superficial inguinal lymph node may lead to urine retention due to pressure on the urethra.

Inflammation of lymphatices means that lymphangitis which appeared in the form of swelled cord like subcutaneous as in case of:-

1- Epizootic lymphangitis (Histoplasma farcimenosum)

2- Cutaneous form of glanders (Farcy disease)

3- Skin tuberculosis 4-Streptococcal lymphangitis in foal

5-Ulcerative lymphangitis

Mucous Membrane In Equine

Conjunctival Mucous membrane can be examined by opening the eye with gentile averting of eyelids by the thumb and for fingers of both hand.

(I)-Color: - Normal color is Rosy

-Abnormal color may be:

1-Pale as in **-**Anemia except hemolytic anemia

-Dehydration or debilitated animal -Heavy parasitism

2-Congested (Reddish): as in African Horse Sickness (AHS)

-Febrile disease -Conjunctivitis -Obstruction of the Jugular vein

3-Yellowish (Icteric):

-Hemolytic anemia

-Liver disease

-Jaundice or blood parasites

-Gastric & duodenal catarrhal inflammation.

4-Cyanosed or bluish:

-Cardiovascular or respiratory disease.

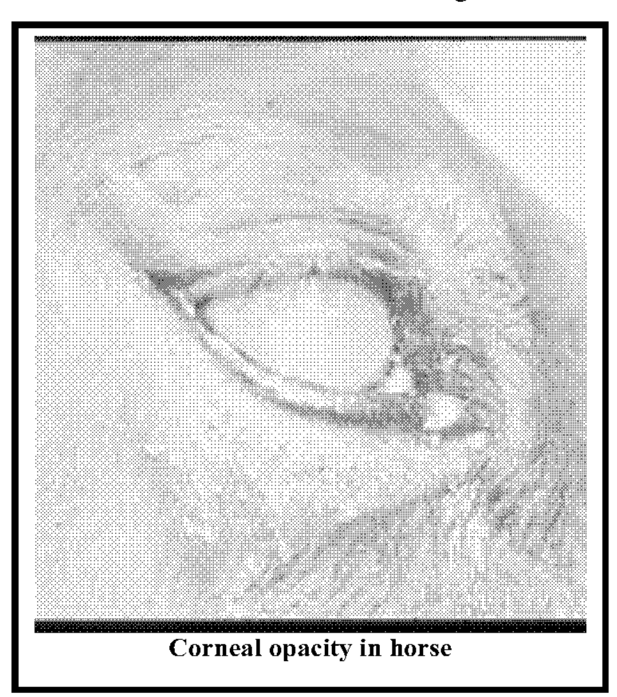
5-Peticheal hemorrhage:

-Septicemia or toxemia

-African Horse Sickness

-Purpura haemorrhagica

-Anthrax or Equine Infectious Anemia



Corneal opacity in horse

II-Swelling and discharge: As in:-

-Trauma -AHS - Conjunctivitis -Strangles -Equine influenza

(III)-Eyes should be included during examination of the mucous membrane.

(IV)-The eye my affected by corneal opacity or hyphoma as in case of some blood parasites or trauma.

Respiratory System In Equine

*The respiratory system is divided into two parts for descriptive purposes, though it is important to note that there is no physical division between the two:

A-Upper respiratory tract. This includes the nose and throat (*pharynx*)

B-Lower respiratory tract. This includes voice box (*larynx*) and the windpipe (*trachea*), bronchi and lungs.

History taking: Including the following questions:-

1-Has the patient a cough? If yeas so, Productive or dry? Painful or not?

2-Has the animal nasal discharge? If so. What is it's characters (serous, mucoid.....etc).

3-Has the animal epistaxis? If so unilateral or bilateral?

4-Has the animal wheeze, sneezing?

5-Is the respiration difficult, rapid or shallow?

6-Is there extension of head and neck?

7- Previous illness & treatment?

Manifestations of Respiratory Diseases (systemic inspection):-

(I)-COUGH**:***It is one of the clearest signs that indicate presence of respiratory diseases, cough may be:

1-Dry cough as in case of:--Pulmonary emphysema

-Interstitial pneumonia (viral pneumonia)

-Parasitic pneumonia -Equine influenza -COPD

2-Moist cough as in case of :-

-Bronchopneumonia -Laryngitis -Bacterial pneumonia

3-Painful cough as in case of :-

-COPD -Sever pneumonia -Interstitial pneumonia -Pleurisy

4-Paroxysmal Cough:

-COPD -Parasitic bronchitis -Pharyngitis -Chronic bronchitis

5-Frequent cough: -Equine influenza –Interstitial pneumonia

6- Hiccup or synchronous diaphragmatic flutter (SDF.)or Thump:-

*Means that spasmodic contraction of the diaphragm during inspiration associated with sudden closure of epiglottis which causes its characteristic sound.

*It's occurred usually due to stimulation of phrenic nerve as in case of:-

-Pherenitis -Electrolyte imbalance

-Hypokalaemia - Hyponitraemia -Hypocalcaemia

NB. Cough can be induced in equine by occlusion of the nostrils for about 30 to 60 seconds or by pressing on the tracheal rings or between the larynx and trachea.

(II)-Nasal Discharge: as in case of:-

1-Rhnitis 2-Bronchitis 3-Bacterial pneumonia

4-Equine influenza 5-pulmonary edema 6-laryngitis

7-Guttural pouch empyaemia 8-Aspiration pneumonia

9-Empyemia in the paranasal sinuses

*Nasal discharge may be serous, mucoid or mucopurealent or scanty or copious according to the degree and severity of the causative diseases.

(II)-Epistaxis (Bleeding from the nostrils Bi- or unilateral).

1-Purpura hemorrhagica (As complication of strangles)

2- Congestive heart failure.

3-False using of stomach tube or endoscope

4-External trauma 5-Foreign bodies in the nasal cavity

6- Erosion in the nasal mucosa in glanders.

7- Mycotic ulceration of blood vessels in the wall of guttural pouch.

(IV)-Sneezing as in case of :- 1-Rhinitis

2-Foreign body in the nasal cavity

3- Aspiration pneumonia 4- Inhalation of irritant smokes.

(V) -Dyspnoea:(Difficult in respiration) as in case of

1- Enlarged sub-mandibular lymph nodes as in glanders or strangles.

2-Pneumonia 3-COPD

4-Aspiration pneumonia

5-Brain diseases

6-Equine influenza

7- Choke

8-Pulmonary edema or hemorrhage

9-Bronchopneumonia

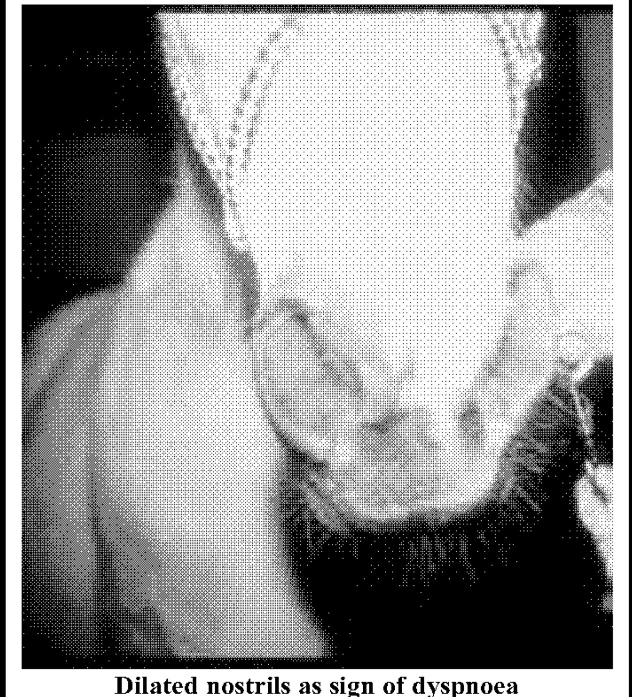
10-Anaemia & heart diseases

11-laryngitis Bronchitis

Signs of dyspnoea:

1-Mouth breathe

2-Dilated nostril



Dilated nostrils as sign of dyspnoea

3-Extention of head and neck 4-Abdominal respiration

5-Double expiratory movement 6-Prolonged inspiration

7- Pumped anus. 8- Prolonged expiration.

(VI)-Stridores: Abnormal Audible respiratory sounds as in case of :-

1-Laryngeal hemiplasia (Roaring sound)

2-Accumulation of nasal discharge in the nasal cavity

3- Glanders & strangles. 4-laryngitis or pharyngitis

5- Fractured nasal bone. (During inspiration & expiration)

6-Paralysis of soft palate (during expiration)

NB. Roaring disease can be diagnosed by pressure on the larynx by the tip of fingers of one hand against the palm of the other hand, if there is roaring disease, there is roaring sound with the inspiration.

(VII)-Abnormal Respiration: * As any abnormal rate, type, rhythm or depth as mentioned before in respiration

(VIII)-Movement of nostrils: As in case of:-

-Dyspnoea -Pulmonary edema, emphysema –Bronchitis

-Sever Bronchopneumonia -Paralysis of diaphragm

Examination Of Respiratory System

1-Examination of the nasal cavity and paranasal sinuses

2- Examination of the pharynx. 3-Examination of the Guttural pouch

4-Examination of the larynx & trachea 5-Examination of the lung & pleura

1-Examination of the nasal cavity and paranasal sinuses

* Examination of the nasal cavity and its associated structures includes the following points

1-Stridores 2-Nasal discharge 3-Movement the nostrils

4- Nasal mucous membrane 5- Expiratory air. 6- Paranasal sinuses.

(1,2 and 3 are mentioned before) 4-Nasal mucous membrane:

1-The nostrils in equine normally dry smooth and free from discharge.

2-Nasal mucosa in equine is easily to be examined because of it's flexible, wide and directed laterally

3-Colour: The directly visible part of the mucosa is pinkish in color while the deep sited part is Bluish –red in color due to high vascularization by venous blood.

Abnormal color:-

1-Congested ---- Acute Rhinitis -Equine Influenza -Febrile conditions.

2-Cyanotic ---------------- Dyspnoea and heart diseases

3-Anaemic or pale- -------Chronic Rhinitis –Anemia -Dehydration

4-Yellowish ---------------Jaundice –Hemolytic anemia – Liver diseases

Lesions: As ulceration a sin Glanders and Epizootic lymphangitis

5-Expired Air:- *Can be examined by holding a paper in front of the mouth to detected presence of unilateral lesions in the nasal cavity

*It may be offensive as in: - -Neglected cases of stomatitis

-Dental decay -Gangrenous pneumonia

-Empyemia in Guttural pouch -Pyogenic infection of paranasal sinuses.

-Accumulation of Nasal discharge in the nasal cavity.

6-Paranasal sinuses: -Most important one is the Maxillary sinus and it can be examined by:

I-Inspection: To determine any swelling or depression at the area of sinuses as in case of:-

-Cellulitis -Neoplasm –Empyemia –Fracture.

II-Palpation: to determine the hotness and existence **of** pain as in paranasal sinusitis.

III-Percussion**:** By fingers or hammer, Normal sound is ***Tympanic***

–Dull sound as in case of empyemia or inflammation (paranasal sinusitis) or tumor

2-Examination of Pharynx, Larynx And Trachea

-The area of throat can be examined clinically by:

(I)-External Examination:-

1-***Inspection*** to determine any swelling at the area of throat such swelling may be inflammatory or non-inflammatory

2-***Palpation***: To determine the nature of any lesions

As: Inflammatory lesions or swelling which is painful and hot on **palpation as in case of: -** Strangles –Glanders -Abscess

-Inflammation of retro pharyngeal lymph node

-Pharyngitis or laryngitis -Guttural pouch empaymia or tympany

Non inflammatory swelling which is painless and cold as in case of:- Pharyngeal obstruction -Goiter -Tumor -Odem

3-Auscultation**:** The normal sound is similar to letter "***CH" and it*** may be abnormal as:

-Dry Rales: as in case of ---------Chronic bronchitis, Bronchial spasm

-Moist Rales: as in case of ------Bronchitis –Tracheaitis

–***Harsh exaggerated*** as in case of –-------- Early stage of pneumonia

(II) Internal examination: - By using of laryngoscope or rhinoscope to examine the lumen and mucus membranes of the larynx, pharynx and trachea.

EXAMINATION OF GUTTURAL POUSH

(1)-It's a pairs of mucus sacs and it is considered as a vertical diverticulum's of the Eustachian tube.

(2)-It present only in the equines it present between the base of the cranium and atlas dorsally and the pharynx ventrally.

(3)-It contains air that derived from the pharynx through the Eustachian tube.

(4)-It is filled with warm air during the expiration and with cold air during the inspiration and it is lined by mucous membrane similar to that of the Eustachian tube.

METHODES OF EXAMINATION:-

Inspection: - To detect any abnormal swelling, dyspnoea or dysphagia as in case of distention of the pouch

Palpation:- To determine the type and the nature of such swelling s either inflammatory or non inflammatory

As in case of: - tympany, mycosis or empayemia of the pouch

Percussion: - May be splashing sound as in case of empayemia or it may be resonant as in case of tympany

NB. Guttural pouch can be examined by using of fibro optic endoscope or radiology

Examination Of The Thorax In Equine

(I)-Inspection:-

* To determine any abnormalities in the respiratory type, depth, rhythm or rate (mentioned before)

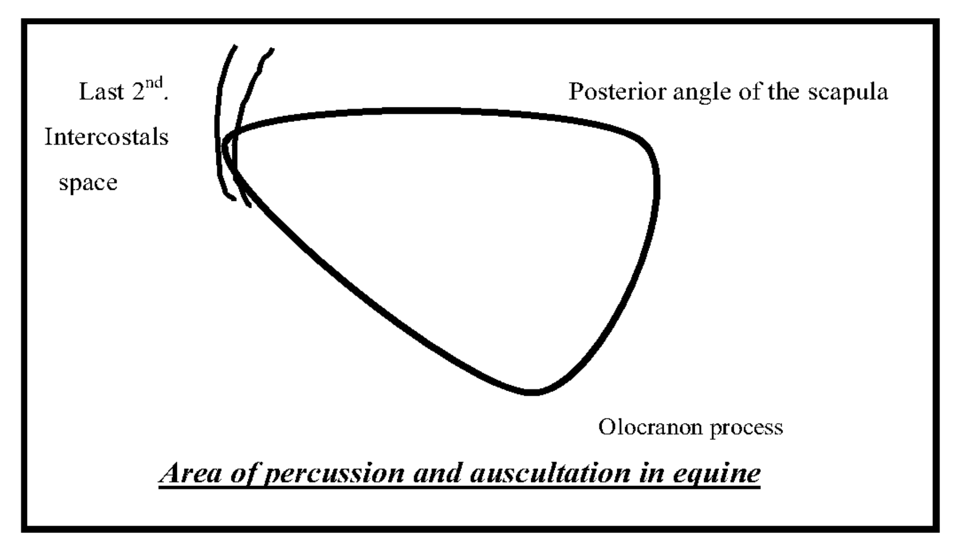
(II)-Palpation:-

*To determine the existence of pain as in case of:-

Pleurisy - Cellulitis - Fractured rib

(III)-Percussion:-

*Mainly in the intercostals spaces in the area of percussion and auscultation



Area of percussion and auscultation in equine

-Normal percussion is "***Resonant sound*** "while abnormal sounds may be :-

1-Hyperresonantin as in -Pulmonary emphysema (COPD) -Pneumothorax

2-Tympanic sound as in case of: - Fibrinous pneumonia



Auscultation of lung in horse

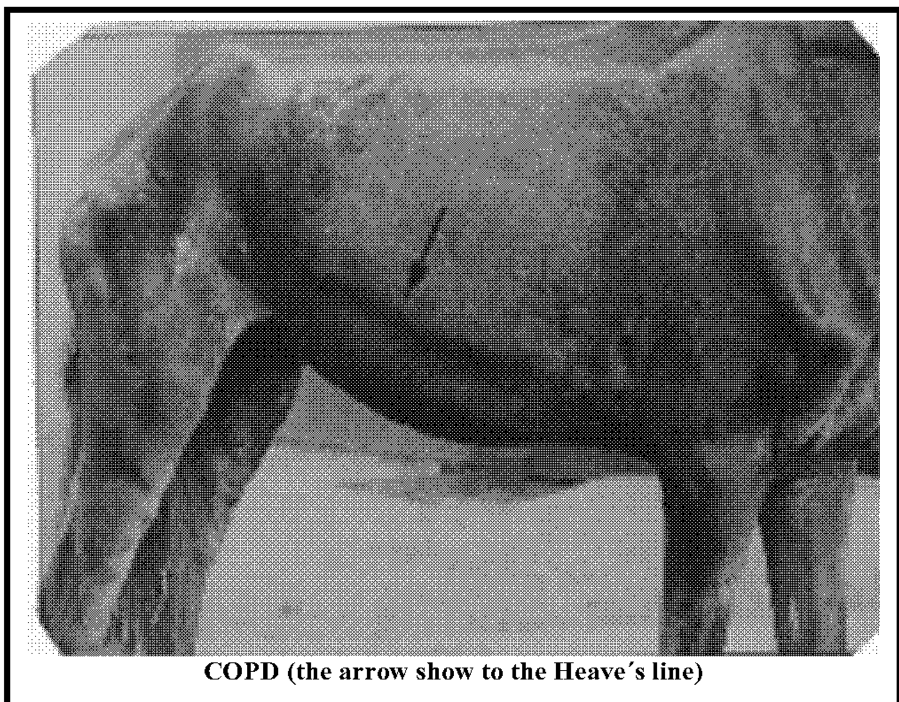
3-Dull sound as in case of: - TB. or Pulmonary edema

(IV)-Auscultation: - Normal sound by auscultation is vesicular sound that resembling to "***V***" letter during inspiration and "***F***" letter during expiration

NB:

1-Auscultation of lungs should be preceded by artificial hyperpnoea by excercising of the animal, that because of normally physiological the expiratory phase in adulte horses has no sound in rest condition

2-Auscultation should be occurred bilaterally, in the intercostals spaces and during complete respiratory cycle.



COPD (the arrow show to the Heave´s line)

Abnormal Respiratory sounds by Auscultation:-

1-*Harsh exaggerated sound as in case of*:

-Early stage of pneumonia

-Bronchitis

-Sever exercising

***2-Moist rales as in case of*:**

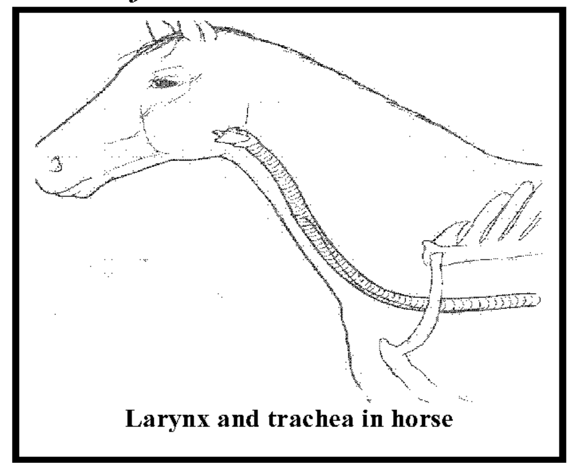
-Bronchopneumonia

-Pulmonary edema or hemorrhage

-Aspiration pneumonia

***3-Dry Rales as in case of*:**

-Chronic Bacterial pneumonia



Larynx and trachea in horse

-TB.

-Bronchial spasm as in tetanus

-Interstitial pneumonia

4-Cripitante rales as in case of: - -Bronchiolitis

4-Frictional (pleurtic sound) as in case of:

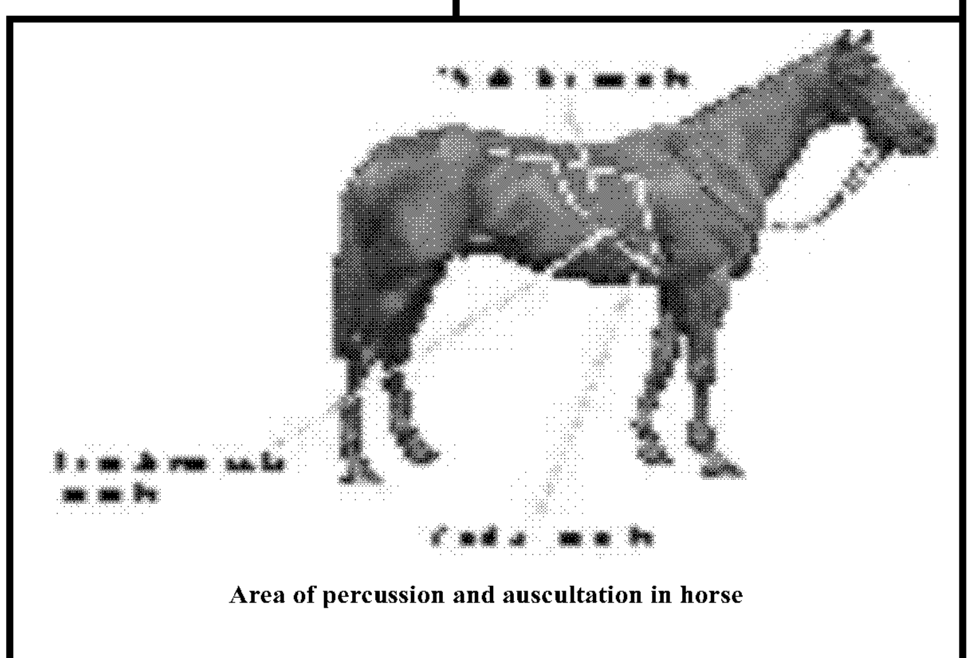
-Pleurisy or pericarditis

5-Emphysematous as in case of:

-Pulmonary emphysema. or COPD



Enlargement of guttural pouch



Area of percussion and auscultation in horse

Urinary System In Equine

Urinary system in equine can be examined by:

1-Inspection (Manifestations of urinary disorders)

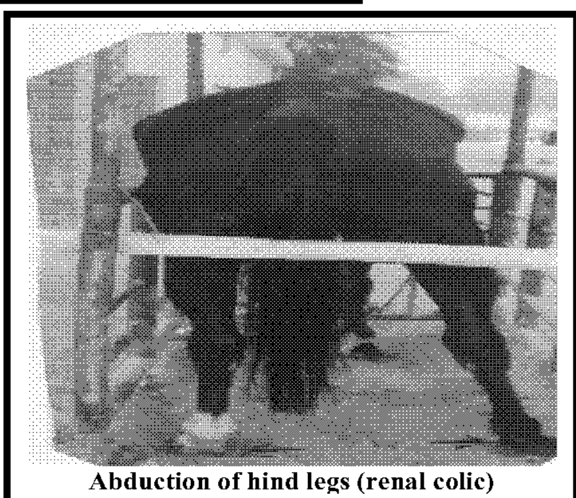
2- Internal palpation.   3-Special methods of examination

Manifestations of Urinary Disorders

1-Manifestations which associated with the act of micturation (urination)

2- Signs which can be detected by physical examination.

3- Signs related to defects in excretion, metabolism or toxemia



Abduction of hind legs (renal colic)

(I)-Abnormal posture of urination:-

-Normally Horses urinate at rest condition. Both male and female adopt the same posture that the hind legs are separated and increase the intraabdominal pressure and allow the urine stream to pass.

-In male slight protrusion of the penis outside the prepuce may occurred

-Abnormal posture as in case of:-

- Urolithiasis
- Cystitis and nephritis
- Lesions in sacrolumber area
- Paralytic bladder

(II)-Frequency of urination

*Generally normal horse can urinate about 5-6 times /day with the level of ml urine /kg Bwt. /hr.

Frequency of urination varies according to:

1-Environmental temperature

2-Amount of Consumed water

3-Amount of water that excreted by other rout as breathing, defecation or sweating.

4-Amount of water that produced by metabolic processes.

5- Healthy conditions of urinary tract.

****Frequency may be in creased as in case of:***

-Cystitis -Acute nephritis -Chronic interstitial nephritis

****Frequency may be decreased as in case of:***

Loss of body fluid by other ways as in case of:-

-Diarrhea

–Hemorrhage.

-Urethral obstruction

-Heart failure

-Dehydration

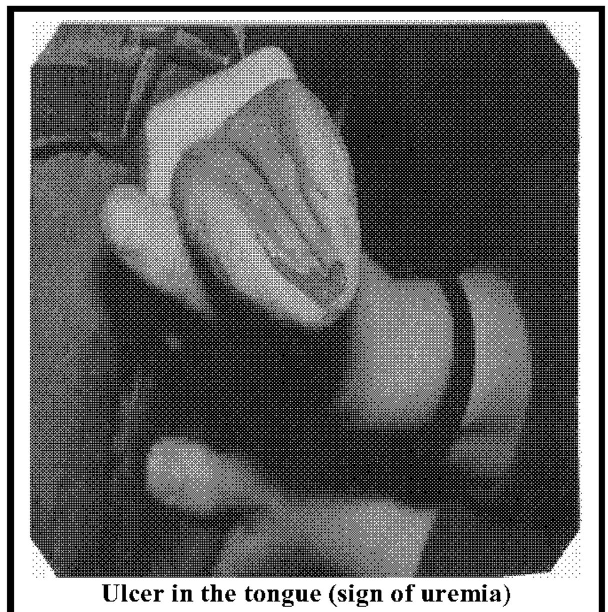
-Lack of water

*Frequent urination may lead to urine scalding on the skin of the inner aspect of the sight.



Urine scalding in the inner aspect of the thigh

(III)-Color of urine


Ulcer in the tongue (sign of uremia)

A-Bloody urine as in case of:-

1-Haemorrhage

2-Urethritis

3-Blood parasites

4-Azoturia (Myoglobinuria)

5-Phenothazin drugs

B-Pyouria as in case of:-

1- Pyelonephritis

2- Renal abscess.

(IV)-Dysuria (painful urination)as in case of :-

1-Urolithiasis 2-Cystitis 3-Renal calculi

4- Urethral obstruction 5-Acute nephritis.

*Dysuria usually associated with groaning sound and signs of abdominal pain as: - Straining -Kicking of the belly

-Arched back -Rolling

-Locking to flank region or restlessness

-Pawing of the ground -Abduction of hind legs as in renal colic

Physical Examination of Urinary System

-The most satisfactory methods of the physical examination of the urinary system in equine is rectally by rectal palpation due to considerable thickness of the abdominal wall, so external palpation is of low value.

-In small animal: Both kidneys can be palpated rectally.

-In medium or large sized animal: caudal border of left kidney palpated

-During rectal palpation the points of examination are:

1-Size 2-Surface of kidney 3-Existance of pain

4- Consistency 5-Ureters 6-Urinary bladder.

Precautions Of Rectal Palpation In Equine:-

1-Wearing a plastic gloves and apply lubricant as water and soap to facilitate introducing the hand rectally.

2-The hand inserted in the rectum in cone shape with rotation.

3-Make back raking or evacuation of the rectum from fecal matter

4-Fasting and administration of anti-tetanic serum is preferred

Points Of Examination During Rectal Examination Of Urinary System:-

1-Size of kidney:

- ***Increased sized kidney as in case of:-***

-Acute nephritis -Neoplasm – Pyelonephritis -Hydronephrosis

-Decreased sized kidney as incase of:-

- Renal failure -Dehydration -Chronic interstitial nephritis

***2-Surface of the kidney*: ** Normally its smooth but it may be lobulated as in case of:-

-Pyelonephritis -Presence of cyst, tumor or abscess

***3-Pain*: -** As in case of acute inflammatory conditions as:

-Acute nephritis -Pyelonephritis -Renal colic

4-Urinary bladder: Can be palpated to determine the degree of its distention and existence of pain as in case of:-

-Calculi –Cystitis

-NB. In case of distension, palpation of the urinary bladder should be taking placed with care to avoid the risk of rupture-under the rectum in male

5-Ureters:

*Can not be palpated except in case of distension with urine as in calculi or urine retention (the ureters appeared cord like)

6-URETHERA:-

*The satisfactory method of examination of urethra is urethral catheterization:-

URETHRAL CATHETARIZATION

In female:-

The urethra is wide and short and the external urethral orifice present about 10 cm in the floor of the vagina away from the valve.

In male:

-The urethra is narrow and long (penile & pelvic part)

-The external urethral orifice present in the opening of the glans penis

Significance of the urethral catheterization

1- Collection of urine sample for bacteriological examination.

2- Diagnosis & treatment of obstruction. By pushing the calculi inward to warded the urinary bladder and then give drugs to dissolve it

3- Flushing of urinary bladder.

Technique of urethral catheterization:

1- Restraining the animal.

2-In male the penis should be relaxed and protrude outside the prepuce by using of tranquilizer as –Comblin (0.5Cm/100 Kg. I.V or IM)

-Neurazine or Neurel

3-Due to considerable length of the urethra in male the catheter should be long but sufficient flexible to be bended at the ischeal arch.

4-The urethral catheter should be lubricated. To facilitate it's introducing

5- Insert the catheter through the external urethral orifice.

6-In female we can use vaginal speculum to detected the external urethral orifice

Disadvantages: - Wound or laceration of urethra & U.B

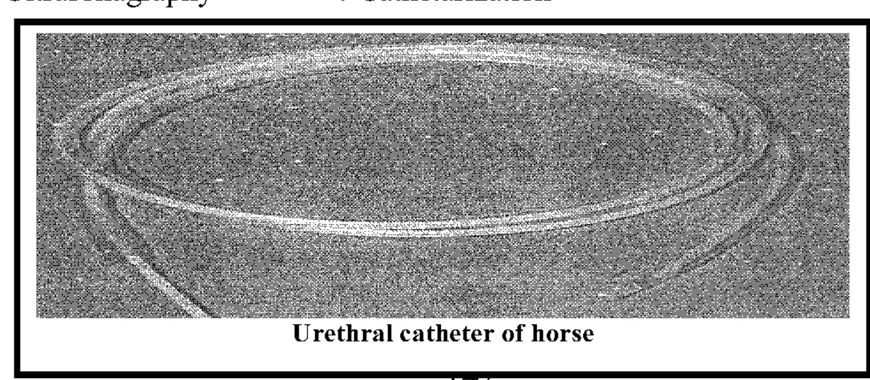
- Bacterial infection of urethra & U.B

Special Methods Of Examination Of Urinary System:

1-Urineanalysis (chemical, physical, microscopically and microbiological)

2-Kidney function test (urea and creatinine)

3-Ultrasonagraphy 4-Cathetarization



Urethral catheter of horse

Cardiovascular System In Equine

Clinical examination of the cardiovascular system includes:

1-Taking of pulse (Mentioned before)

2-Manifestations of cardiovascular diseases (inspection)

3- Examination of superficial blood vessels & mucous membranes.

4- Examination of the heart.

5-Special methods of examination

Manifestations of cardiovascular diseases (inspection)

1- Jugular vein pulsation as in tricuspid valve diseases.

2- Body edema as in right congestive heart failure.

3-Epistaxis and coughing as in hypertension

4- Cyanosis of mucous membrane.

5-Abnormalities in respiration

6-Loss of consciousness

7-Staggering in gait

8- Sub-normal body temperature

9-Coldness of skin & extremities

***Examination of superficial blood Vs.**

1-Jugular vein pulsation

*Jugular vein pulsation is not present in normal animal

*Jugular vein pulsation may be:

True (pathological) as in case of:-

-Tricuspid valve insufficiency -Pericarditis

-False (physiological) as in case of:- lean or emaciated animal

-To differentiate between true and false pulsation by digital pressure at the Jugular furrow at the base of the neck if:

*Pulsation disappeared in case of → True jugular vein pulsation

*Pulsation présente in case of → False jugular vein pulsation

<u>*Cyanosis or congestion of mucouse membrane:</u>

Cyanosis occurred in most of heart diseases specially congenital than aquired one.

Pyrexia fever } Congestion in the mucous membranes
Dyspnoea or sunstroke.

Examination Of The Heart

1-The heart in equine present in asymmetrical position. Most of the organ present on the left side of the median plane of the body.

2-The left ventricle is in contact with the chest wall at the level chest wall at the level of 3-6th ribs

3-Right Atrioventricular valve (Tricuspid) present opposite to 4th about 7cm from the lower extremity of the 4th rib

4-Left atrioventricular Valve (mitral) present opposite to 5th about 10cm above the lower extremity of the 5th rib.

5-Semilunar valve of Aorta→ present in 4th. Intercostal space in a line horizontal to the point of shoulder.

6-Semilunar valve of Aorta→ pulmonary A opposite to 3rd. intercostal space about 7-10cm. From lower extremity of 3rd 7.

Methods of Examination of the heart

1-Inspection 2-Palpation 3-Percussion

4-Auscultation 5-Special methods

(I)-Inspection:-

1- To determine the general manifestations of heart diseases.

2-To detect the apex beat in thin coated animal due to contraction of the left ventricle

-Apex beat may be more pronounced as in sever exercise.

(II)-Palpation:-

1-For determining the excistance of pain at the area of heart as in case of:-

- Pericarditis -Myocarditis -Endocarditis

2-Apex beat can be determined by palpation and it may be

1-Absence of apex beat: as in case of

-Hydropericardium -Pericarditis -Hydrothorax

Because of the heart is forced away the wall of the chest

2-Increased apex beat as in case of:-

-Fever exercise -Excitation -Ventricular hypertrophy

3-Palpation of apex beat, we can determine the pulse rate and Judge are there any abnormalities in the pulse rate as tachycardia or bradycardia.

(III)-PERCUSSION:-

*Normal percussion → Dull sound (cardiac dullness that due to the heart is gas free organ)

Abnormalities of percussion

I-Increase the area of cardiac dullness as in case of :

-Hydropericardiam –Ventricular hypertrophy

-Cardiac displacement -Haemipericardium -Pericarditis

II-Decrease the area of cardiac dullness

-Pneumothorax -Pulmonary emphysema -Exudative pleuritis

(IV)-Auscultation:-

A- Normal heart sound by auscultation is:-

I- 1st. or systolic heart sound due to contraction of the wall of the ventricle with closure of the atrioventricular valve.

It's similar to ***lupp*** sound

2- 2nd. or diastolic heart sound. Due to closure of the semilunar valve

It's similar to ***dubb*** sound



Auscultation of heart in the horse

B-Abnormal Heart sound by Auscultation:- In the following table:-

I-load heart sound	**II-weak heart sound**
1-Sever Anemia	1-Old or senile animal
2-Ventericular hypertrophy	2-late stage of myocarditis
3-Pulmonary diseases	3-Myocardial weakness
4-Excercise	4-COPD
5-Toxemia & fever	

C--Murmurs

1-Systolic murmurs: →due to defect in the atrioventricular valve it's usually concomitant with **systolic** sound.

2-Diastolic murmurs→ due to defect in semilunar valve. It's usually Concomitant with diastolic sound or between diastolic and the next systolic sound

D--Frictional sound as in case of → Pericarditis –Pleurisy

E-Muffled sound as in case of → Late stage of pericarditis

F-**Tachycardia and bradycardia** -------- mentioned before in examination of the pulse

NB.1-Systolic and diastolic sounds are easy to be distencted during or at rest condition. 2- On Auscultation the foreleg should be drown forward.

3-The area of percussion and Auscultation is 3-6th inter costal space on the left side and 4-6th. Intercostals space on the right one.

4-The animal is in standing position.

SPECIAL METHODS: - 1-Electrocardiograph. (ECG) 2-Phonocardiograph. 3-Ultrasonography. 4- Echocardiograph

Electrocardiography (ECG)

*Electrocardiography means that recording of electrical impulses that generated by the heart on the body surface

*This impulses transmitted from the body surface via electrodes to a machine called Electrocardiography.

This machine translate or convert these electrical signs into waves sequence P-QRS-T called ECG traces

(A)-Phsiological principle of ECG

1-In the normal resting state:- *-The muscle cells are polarized as positive ions present extra cellular and negative ions present intracellular.

*This distribution of ions is controlled by the selective permeability of the cell membrane

*The cell membrane is completely impermeable to Na^+ Ions which present extracelluar but partially permeable to the potassium K^+ Ions which present intracellular and chloride CL ions which present exteracellulary. So the net result is positive ions outside and negative ions inside.

2-Upon stimulation:- *-During stimulation the cell membrane of cardiac muscle suddenly increase it's permeability to sodium Ions(Na^+) with rush of large amount of sodium ions inside the cells which become positive inside and negative outside this called "***Depolarization***" causing contraction of the cardiac muscles.

3-*After Ending of stimuli:-* *After ending of stimuli the membrane of muscle cells returned to it's normal state in which the outside of the cells

become positive and this process called ***Repolarization*** which leads to relaxation of the muscle (due to Na-k pump).

(B)-Anatomical principles of ECG:-1-The heart present in the center of an equilateral triangle of an equilateral triangle determined by 4 leg electrodes which are:- ***1-RA→Right Arm***

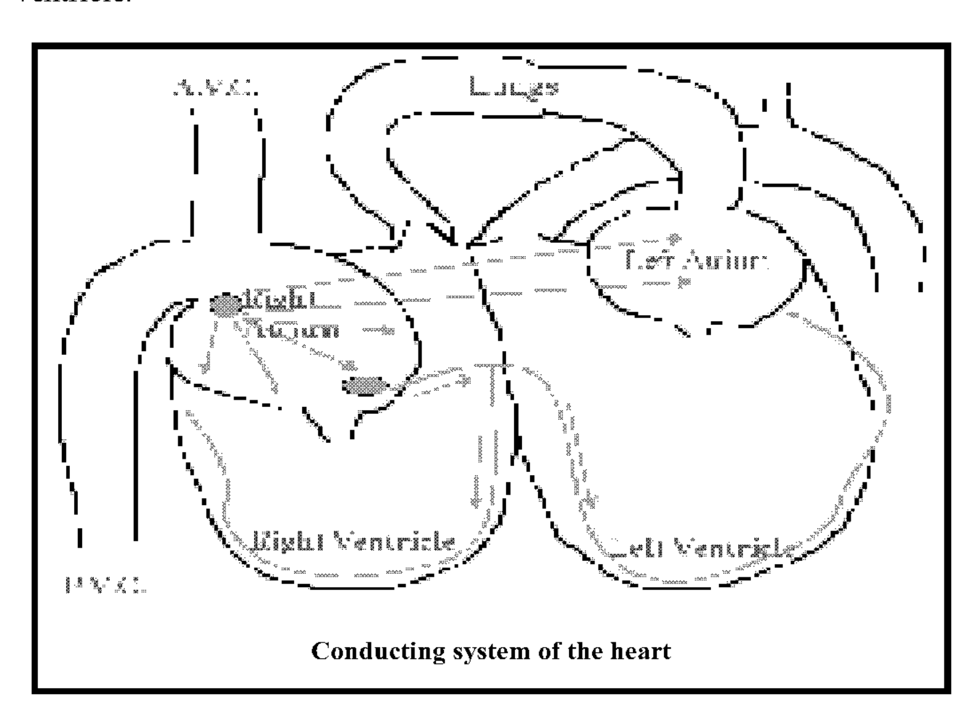
2-LA→ Left Arm ***3-LL→Left leg*** ***4- RL →Right leg***

(C) -Conducing system of the heart is:

1-S-A (Sinoatrial node) that present in the wall of the right atrium

-It's called pace maker because of its highest rate or discharge of impulses

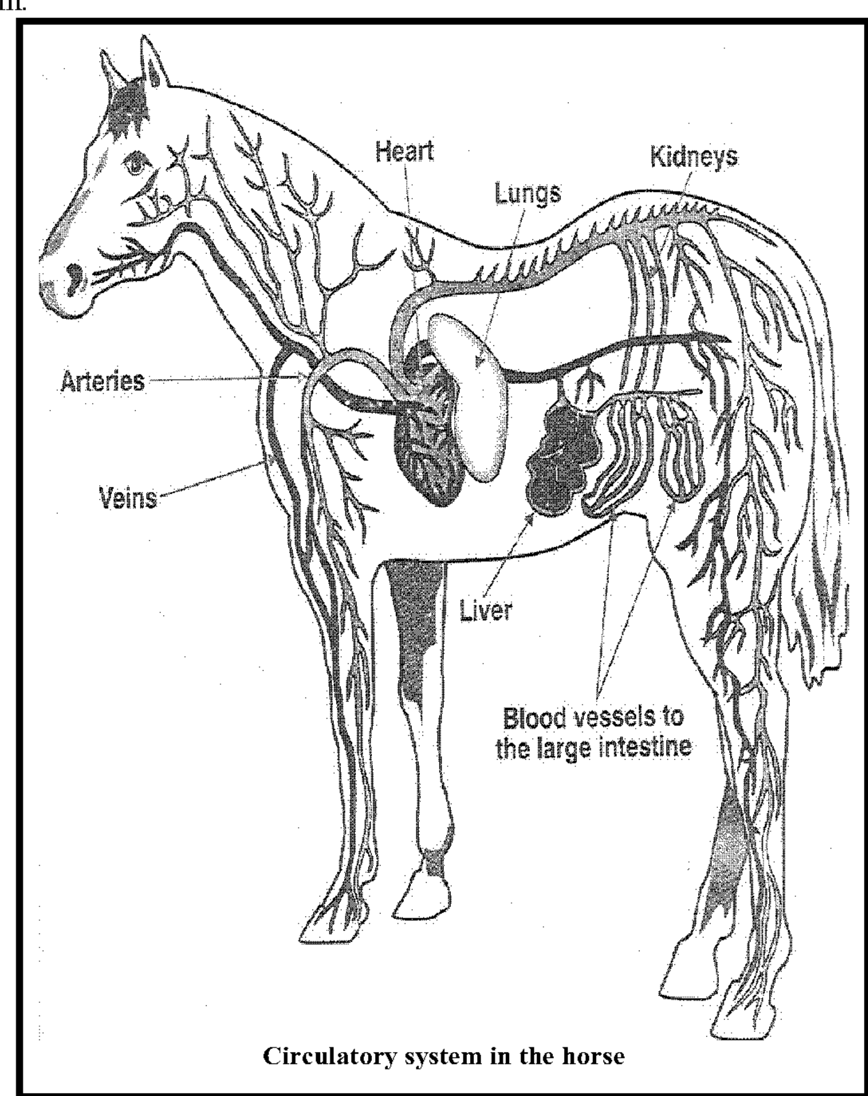
2-A-V(Atrioventricular node):-That present between the atrium and ventricle.



Conducting system of the heart

3-Bundle of His:-That is right and left bundles branches with Purkinje fibers.

4-Interaatrial bundle:*Transmits the impulses through the wall of the atrium.



Circulatory system in the horse

Technique of ECG

(I)-The best method of recording ECG in equines is so called ***Base Apex lead system*** in which the 4 electrodes of ECG are applied as the following

1-RA→ Right Arm lead is placed on the right jugular furrow

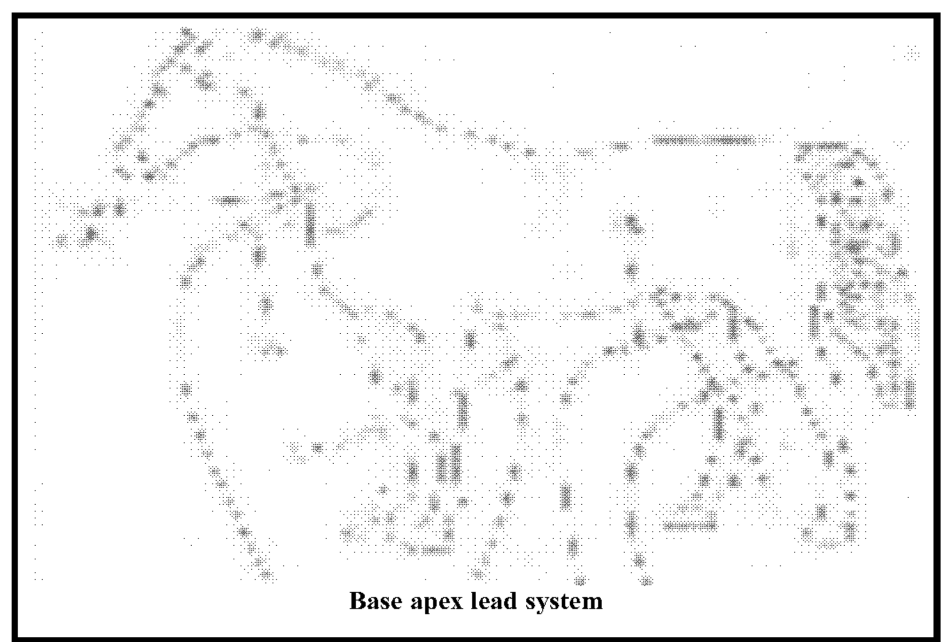
1- R.L→ Right leg lead is placed on the skin of right stifle joint

2- L.L. → Left Leg lead is placed on the skin of left stifle joint

3- L.A. →Left arm lead is placed on the skin of the apex of the heart on the ventral midline

(II)-The area of attachment of electrode with the clips should be moisted by alcohol in order to ensure good chip to skin contact

(III)-Adjust the monitor to lead II and speed 25mm/S. and observe the waves of ECG



Base apex lead system

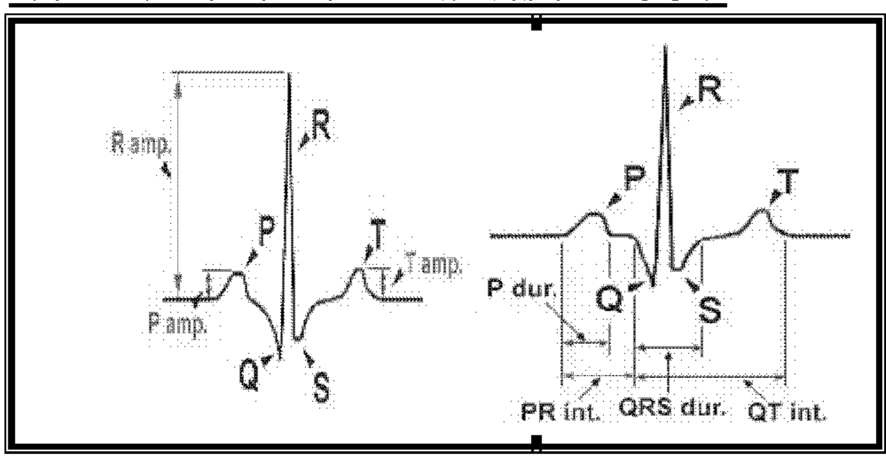
Clinical importance of ECG

1-Determination and diagnosis of some cardiac diseases

2- Monitoring of the heart during surgical operation.

3-monitoring of the heart effects of electrolyte imbalance on the heart action

Identification of normal waves of ECG :-



1-P-wave

-It represents the depolarization or contraction of the atria.

-It may be bifurcated in horses to

P1→ Depolarization of right atrium

P2→Depolarization of the interatrial septum

-Repolarization of atrium is silent on ECG

2-QRS complex

*It represents the depolarization or contraction of the ventricles.

3-T-wave:

*It represents the repolarization or relaxation of the ventricles.

4-PR-interval

*Represent the time necessary for transmission of the impulse from the S-A. Node to A.V. node

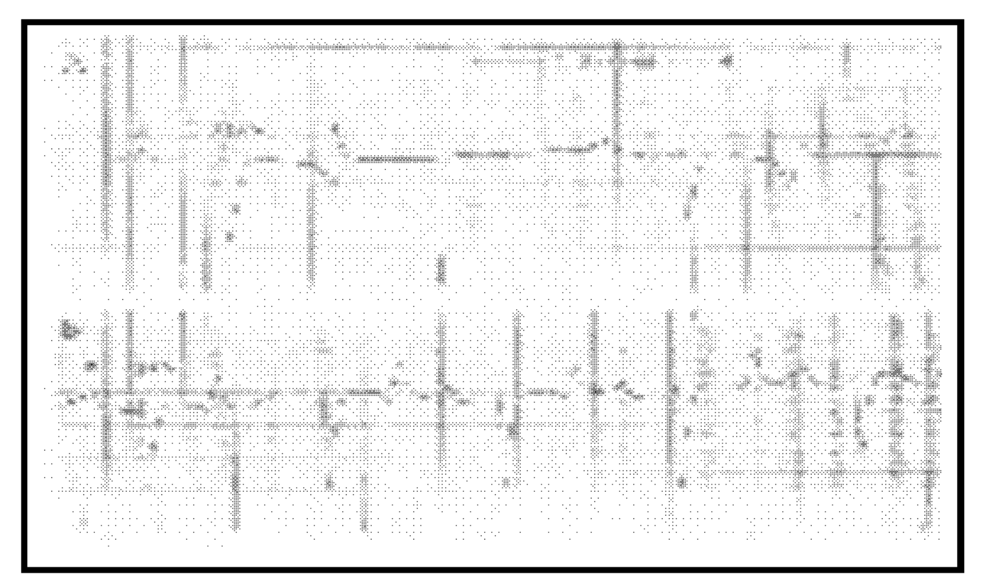
5-P-T interval

*Represent the time required for depolarization and repolarization of the impulse from the S-A. node to A.V node

6-Q-T interval:

*Represent the time required for depolarization and repolarization of the ventricles (contraction and relaxation)

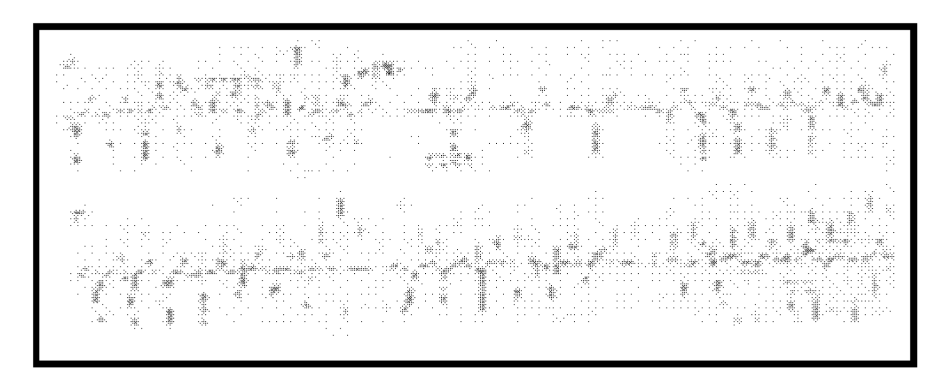
- Normal trace of equine ECG:-



A-During rest condition

B-After slight exercise

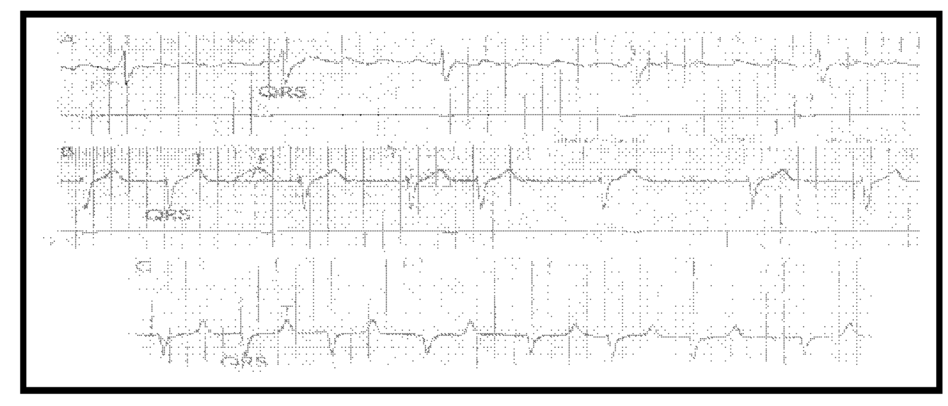
SOME ABNORMAL ECG IN EQUINE



1-Atrial or ventricular tachycardia

*Characterized by decrease the distance between the ECG waves, P and QRS waves are normal and it is usually followed by ventricular fibrillation

Examples: Myocardial diseases, Electrolytes imbalance or febrile conditions.



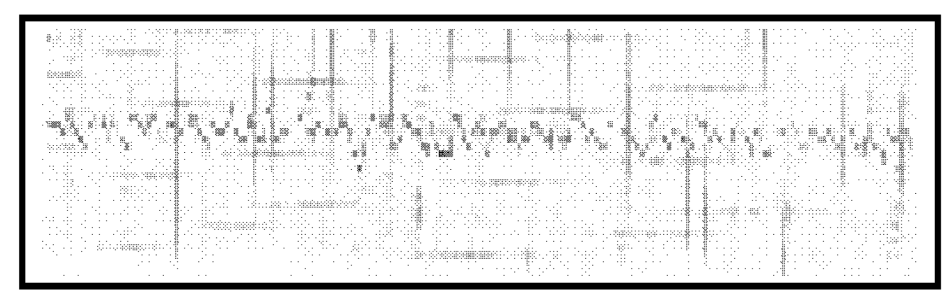
2-Atrial Fibrillation

*Characterized by weak P- wave and it is replaced by fine or variable waves known as F-wave, flutter or fibrillation wave

(P- Wave is replaced by 4-5 or more waves called F-waves)

Examples:–*Hypoxia -Atrial enlargement due to mitrial regurgitation

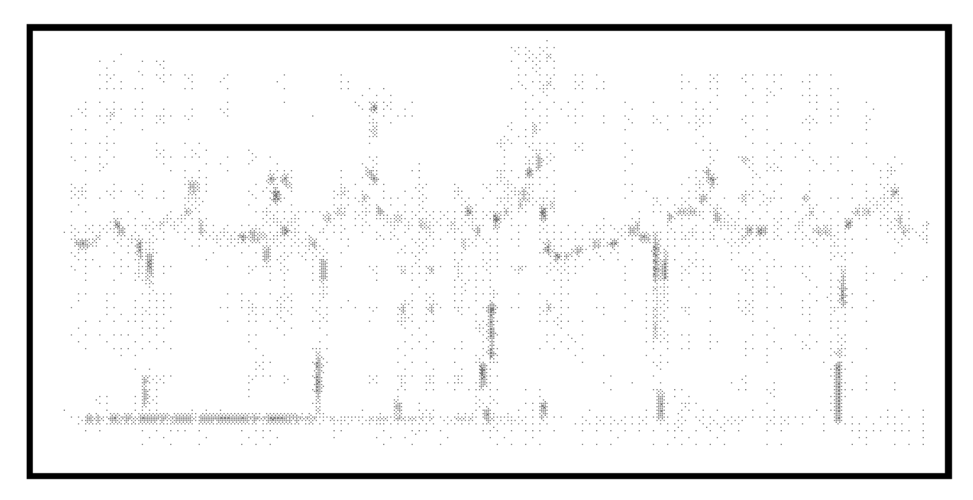
-Colic -General Anesthesia or poor performance horse



3-Ventericular Fibrillation

*Characterized by absence of the sound of the heart and absence of the arterial pulsation with very rapid and weak waves.

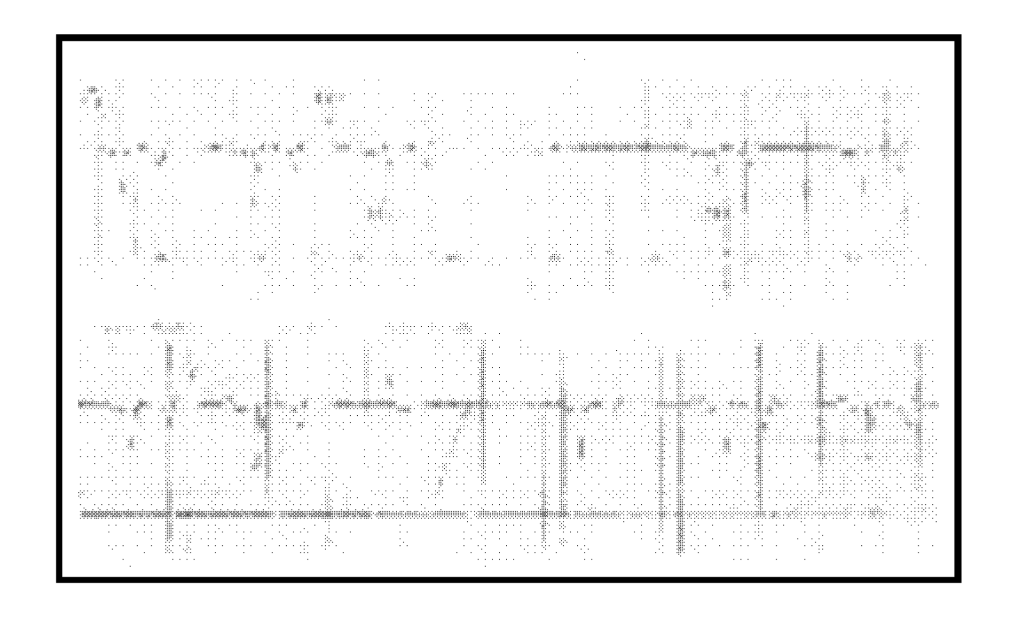
Example -Prior to death or shock



4-Ventericular premature depolarization

-QRS-Complex is large -T-wave is high -Absence of P-wave

Example – Primary or secondary myocardial diseases -After exercise



5-*Atrioventricular block(2nd degree)*

* Characterized by P- wave not followed by QRS wave

Example:- Atrioventricular valve diseases

Digestive System In Equine

-Functions of the digestive system:

1-Prehension and mastication:

Horse uses its incisors and lips in holding up and introducing the food into the mouth. Tongue plays an important role in prehension and mastication.

2-Deglutation or swallowing:

-That means transportation of masticated food from oral cavity to the stomach through the pharyx and oesophagus.

-Floor of the mouth, tongue, laryngeal muscles and esophagus are the important organs of swallowing

3-Digestion

-That means transformation of the masticated food to the easly absorbable form by mechanical or chemical digestion.

4-Absorption:-

-Transportation of the digested food from the intestinal tract to the blood stream then to the vital organs in the form of nutrients.

5-Excretion of waste products:-.

Through the process of defecation

6-Endocrine functions through pancreatic secretion.

Points of Examination of Digestive System:

1-Taking of History

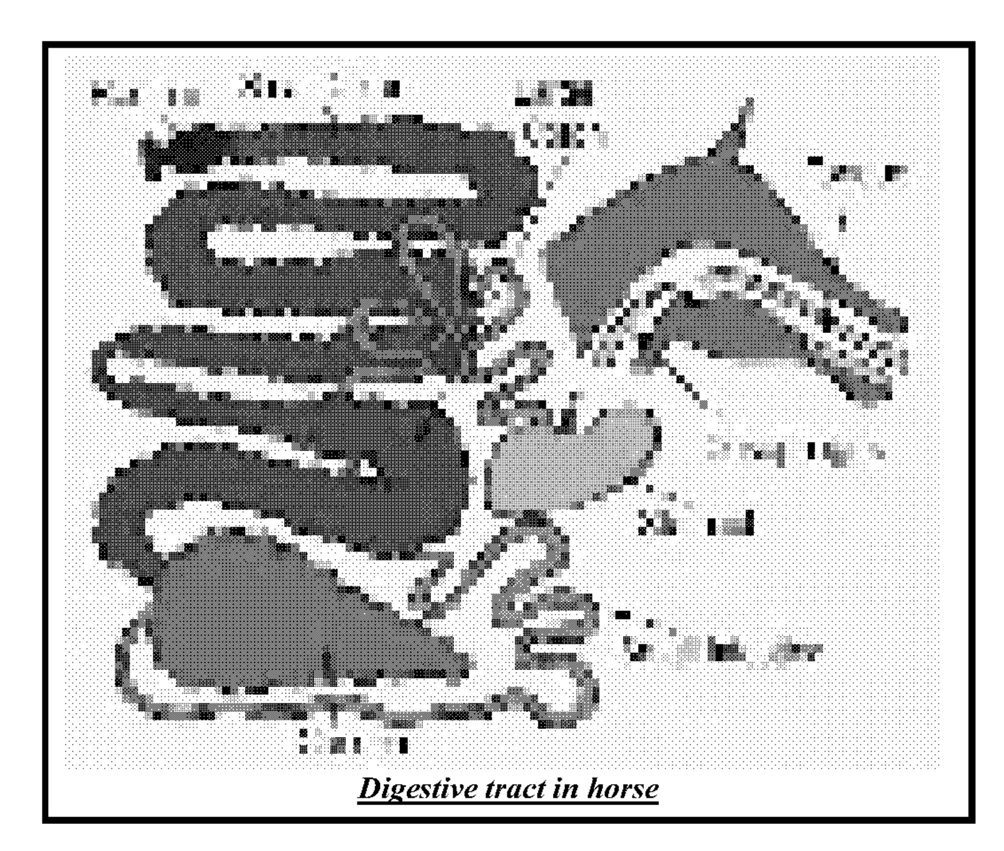
2-Inspection or general manifestations of digestive disorders.

3-Examination of the oral cavity

4-Examination of the pharynx and esophagus

5-Examination of the Abdomen   6-Rectal examination

7- Special methods of examination of digestive tract.



Digestive tract in horse

1-HISTORY (ANAMENSIS) OF DIGESTIVE TRACTE

*Taking of history is very essential point of examination of the digestive system. And the essential parts of such history should be includes the following questions:

1-Asking about appetite and we should differentiate between anorexia and inability to eat.

2-The first signs and duration of illness

3-Asking about defecation and physical characters of Dung (faeces)

4-Types of diet and feeding system

5-Sudden change in diet

6-Previous illness and previous treatment and it's response.

2-INSPECTION [MANIFESTATIONS OF DIGESTIVE DISEASES]

(I)-State of appetite:-

A--Polyphagia: *Which manifested in the form of consumption of excessive amounts of food (Hyperphagia)

Examples: 1-Heavy infestation by internal or external parasites

3-Starvation 4-lactation or pregnancy 5-Diarrhoea 6-Diabetus

B-Inappetance: (incomplete loss of appetite) as in case of:-

1-Sudden change in diet 2-Feeding of unpalatable food

3-Change in environ ment 4-After violent exercise

5- Painful conditions as gastric dilatation or colic.

C-Anorexia: Complete loss of appetite as in case of:-

-Acute infectious diseases that associated with fever as gladness, strangles, Hyperthermia ……etc.

D-Alletriophagia or pica: That manifested in the form of eating of unusual food as in case of: - 1-Calcium or phosphorus deficiency 2-As bad habit

3-Nacl or cobalt deficiency 4-Hunger or starvation

5-Some infectious diseases as rabies

(II)-Abnormal prehension and mastication:

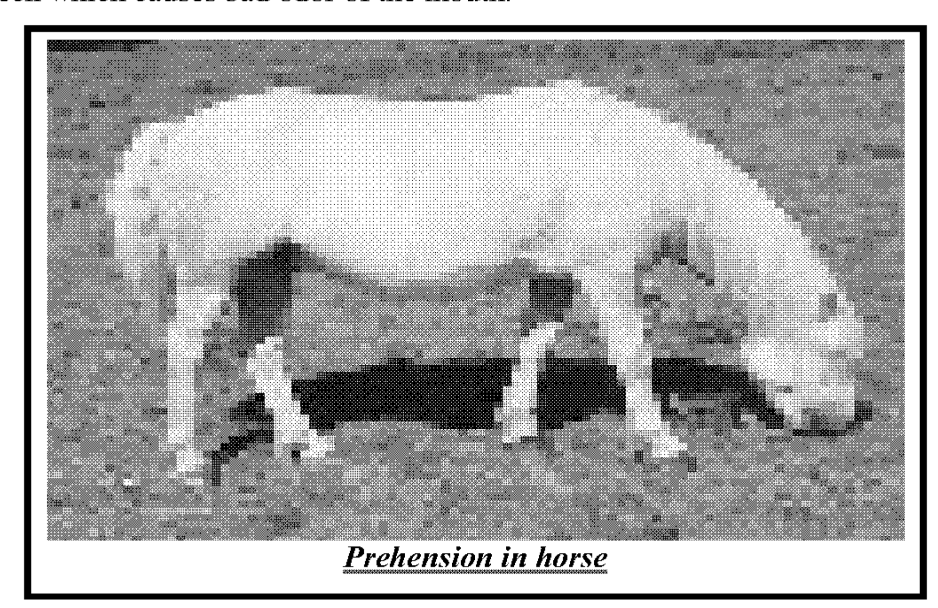
Abnormal prehension and/ or mastication can be manifested in the form of: 1-Excessive salivation 2-Regurgetation of food and/ or water

3-Passe of undigested food particles with defecation

4-Pain full or difficult mastication 5-Smacking of lips

6-Drippling of food from the mouth

7- Retention of food particles in the mouth usually between the gum and check which causes bad odor of the mouth.



Prehension in horse

Example:

1- Stomatitis including (glossitis, Gingivitis or palatitis)

2-Sharpe on broken teeth (more common)

3-Tetanus or strychnine poisoning due to difficulty in opening the mouth

4-Lodged foreign body in the mouth

5-Inflammation or paralysis of lips

NB: Abnormal prehension or mastication may be associated with maintained appetite as in sharp teeth or stomatitis

(III)-Thirst (increased desire for water)

Thirst or increased desire for water manifested by excessive water intake (polydipsia) as in case of:

1-Fever or starvation   2-After violent exercise

3-Catarrhal inflammation of stomach or intestine

4-Peritonitis   5-Excessive salivation

6-Sever diarrhea or dehydration.

(IV)-Dysphagia:

Dysphagia means that difficulte in swallowing or deglutation which manifested by:

1- Regurgitation of food and or water.   2- Salivation.

3-Extention of head and neck   4-Coughing may occur.

5-Forceful attempts of swallowing

6- Some nervous manifestations as pawing of the ground.

7-Contraction the neck of muscles

Examples: -Oesophegitis   -Pharyngitis

-Choke (esophageal obstruction)

-Foreign body or tumor

-Strangles or glanders due to enlarged lymph nodes

- Esophageal dilatation or diverticulum.

(V)-Excessive salivation (Sialosis –ptyialism)

I-Infectious causes:	II-Non –infectious Causes
1-Rabies	-Stomatitis -pharyngitis
2-Vesicular stomatitis	-Sharpe teeth –oesophegitis.
3-Tetanus	-Iodism -choke
	-Organophosphorus toxicity
	-Dysphagia -paralysis of Jaw

N.B: Normally the muzzle in equines should be dry and free from any discharge or lesions.

(VI)-*Diarrhea :*

*Diarrhea means that increase the frequency and water contentes of the fecal matter associated usually with in creased peristaletic movemente of the intestine and it may be:

***A-Associated with rising of body temperature (infectious) as in case of*:-**

1-E-coli 2-Sallmonellosis

3-Other Bacterial or viral diseases of GIT

B-Associated with normal body temperature (Non-infectious) as in case of:- **I–Parasitic infestation:** Ascariasis 2-Strongylosis

II-Nutritional causes: Sudden change in diet especially in foal

2-Feeding of unpalatable diet

3-Copper deficiency -Vitamin –A deficiency

C-Other causes: 1-Antibiotices induced diarrhea due to administration of antibiotics for long period as (oxytetracyclin, tylosin, erythromycin, penicillin, sulphonamid)

D-Colitis-X (per-acute enteritis –death with 24 hours muddy mucus membrane)

E- Late stage of congestive heart failure. (Right C.H.F.)

E- Neurogenic diarrhea as in excitement.

(VIII)-Constipation or scant feces:

Constipation means that difficulte defection or defecation of dry fecal matter while scante faeces means that defecation small amount of faecal matter either dry or soft as in case of :-

1-Proctitis (Abscess or inflammation of the rectum)

2- Dehydration. 3- Lack of water intake.

4- Painful condition in the rectum or anus

5- Partial obstruction of the large intestine.

6- Impaction of caecum or large intestine.

7-Paralytic ileus (paralysis of ileum due to surgical interference)

8- Fibers deficiency in diet.

9-Grass sickness in horse (associated with alimentary tract stasis)

10-Excessive a mount of atropine sulfate administration

11-Intestinal accident (intussusception- volvulus –strangulation)

(IX)-Vomiting (emesis) False vomiting or projectile vomiting is the most common type of vomiting that occurred in equine as in case of:-

-Choke -Intestinal –obstruction, while true vomiting not occurred in equine due to

1- Ill developed vomiting center

2- Long soft palate and esophagus

3- The stomach is suspended in the middle of abdominal cavity

NB. True vomiting may occures in gastric dilation which indicated to ruptured stomach and death.

(X)-Abnormal appearance of the abdomen:

1-Generalized distention of the abdomen as in case of :-

1-Ascitis 2-Peritonitis 3-Impaction

4-Pyometria 5-Late stage of pregnancy 6-Tempany

7-Retained meconium in the newly born foal which usually associated with sever distension of the colon

*Generalized distension of the abdomen usually associated with the signs of abdominal pain.

2-*Localized distension of the abdomen as incase of:-*

1-Hernia 2-Abscess 3-Haematoma. 4-Cyste or tumor

3-*Decreased or sunken abdomen:*

1-Dehydration 2-Heavy infestation by parasites.

3-Nutritional deficiency 4-Starvation

5-Long wasting or cachexic diseases As T.B 6-Grass sickness

NB. The most of the abnormal conditions of the abdomen in the horses are usually associated with the signs of abdominal pain or colic as:-

1- Looking to the flank region .2- Pawing of the ground .3- Rolling.

Examination of the oral Cavity

-Examination of the oral cavity includes the following points:

1-Closure and opening the mouth

2-Examination of oral and labial mucosa

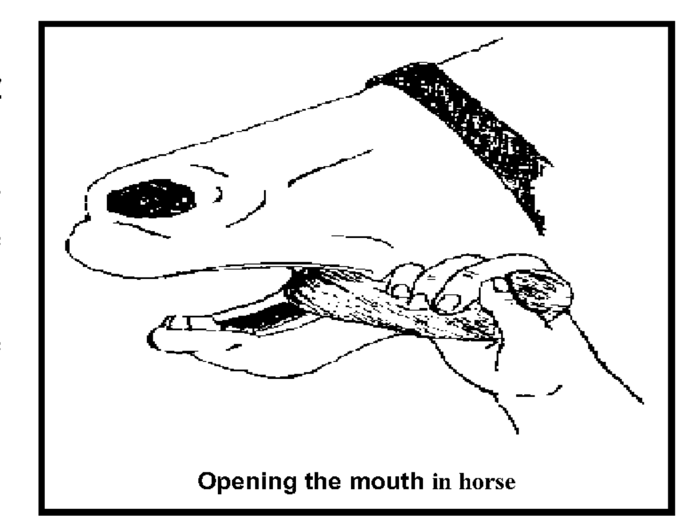
3-Examination of tongue, teeth and 4-Adour of the mouth

5-Saliva (mentioned before in sialosis as manifestation of digestive diseases)

Opening and closure of the mouth:

-The mouth is difficulte to be opened as in case of:

-Tetanus –Strychnine poisoning.



Opening the mouth in horse

-***Incomplete closure or permanent opening of the mouth as***

-Rabies (trigeminal nerve Paralysis)-Stomatitis

-Dislocation of the Jaw –pharyngitis

-Foreign body -sharp teeth

-Paralysis of facial nerve. –Glossitis.

-***Oral and labial mucosa:-***

*The mouth should be opened by using a special gag.

*Color of the mucosa: Normally pale rosy.

Abnormally:- ***1-Pale*** color as in case of → Anemia –emaciation – dehydration – hemorrhage

2-Icteric color as in case of → Jaundice –liver disease

3-Congested color as in case of →Stomatitis –febrile diseases


Examination of mucous membrane and teeth

4-Bluish (cyanosis) color as in case of → pulmonary or heart diseases which usually associated with dyspnoea

***-Odor of the oral cavity*:**

Normal odor is acceptable

Abnormal odor may be:

Acetone odor as in case of →Ketosis

Urinefrous as in case of → Uremia

Putrefied as in case of → Stomatitis –Dental caries- Pharyngitis- Gangrenous pneumonia

-Oral lesions*:* *As ulcers, vesicles or foreign body. As in case of stomatitis (ulcerative, vesicular)

-Tongue :-Tongue should be examined against any lesions on foreign B.

-Tongue my be ulcerated as in ase of CHF or uremia

-Teeth and jaw: _Teeth and Jaw should be examined for

1-Dentation of the animal 2-Sharp or malocluded teeth

3- Dental caries. 4- Dislocation of Jaw.

5-Any abnormal conditions in the teeth usually associated with abnormal mastication.

Examination of pharynx and oesophegus

*Any abnormal lesions in the pharynx and/or oesophegus usually manifested by difficulte in swallowing (dysphagia) mentioned before.

Examination of the pharyx mentioned before with respiratory system

Oesophagus: *The oesohagus is musculomembranous tube extended from the pharyx to the stomach.

-It pass dorsally to the larynx but at the level of 4^{th} cervical vertebrae it lies on the left side of the trachea and contineued as far as 3^{rd}. thoracic vertebrea.

-Points of examination:

1-Inspection: To detected any lodged foreign body is the oesophagus which be inspected on the left side at the jugular farrow. as in case of:

-Choke -Oesophegeal diverticulum

2-Palpation:- Oesophegus cannot be palpated in the normal healthy animal ,so attention should be paid to any swelling at the left jugular farrow which my be :-

A-In the lumen of the eosophegus as in case of :-

- Choke -Tumour - Oesophegeal diverticulum

B-In the wall of the eosophegus as in case of :-

-Old injuries - Abscess - Warble fly larvae

C-In the immediated surrounding of the eosophegus as in case of :-

- Odema -Emphysema

-Cellulitis due to administeration of irritant drugs

NB. *Eosophagus can be examined by other special methods as :-

1- Stomach tube

2- Endoscopy to examine the healthy condition of the inner mucous membrane and lumen of the esophagus.

EXAMINATION OF THE ABDOMEN

(I)-INSPECTION

*To determin the presence of any enlargment or any abnormal appearance in the abdomen (mentioned before)

(II)-Examination of the stomach:-

* The stomach in the equine represented about 12% of the total area of the digestive tracte , its present in the left side of the median plane of the body in the concavity of the diaphragm and it's not contacte with the abdominal wall excepte in very limited circumestances as tempany or impaction

-It's very difficulte to examine the stomach clinically so. clinician should take in consideration the other information or data aboute the gastric diseases.

Example: *Gastric dilatation usually accompained with.

1-Respiratory distress

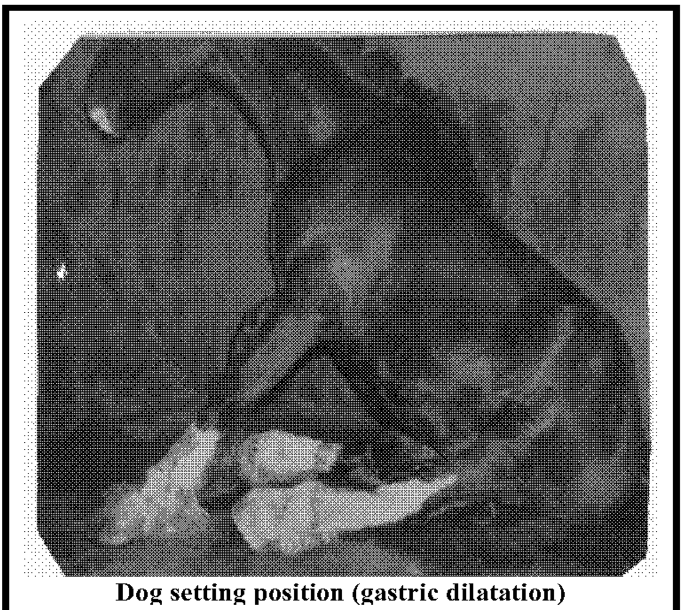
2-Regurgitation of food

3-Contineous pain with cold sweating

4-Congested mucous membrane.

5-Shallow breath due to vaulantary restricted diaphragmatic movement that due to the stomach press on the diaphragm.

6-Dog setting position as attempte to releife the pressure on the diaphargm.



Dog setting position (gastric dilatation)

(III)-Examination of the intestine :

*Normal sound by Auscultation called ***Barborygmi peristaltic sound***

-Caecum: can be Auscultated on the right side

-It's sound present all time and reach it's maximum intensity every 15-20 second.

-Palpation is of low value. Due to rigidity of the abdominal muscles.

Colone : can be Auscultated from the left side.

-The sound similar to that produced when fluid with free surface is moved.

Abnormal sound:

1-loud sound (in creased peristaletic movements)as in case of :-

-Spasmodic colic

-Early enteritis

-Early stage of volvulus

-Early stage of verminous aneurism

2-No-sound (Decreased peristaletic movement) as in case of:-

-Peritonitis

-Impacted colon or caecum

-Constipation

-Intestinal tempany

–Grass sickness

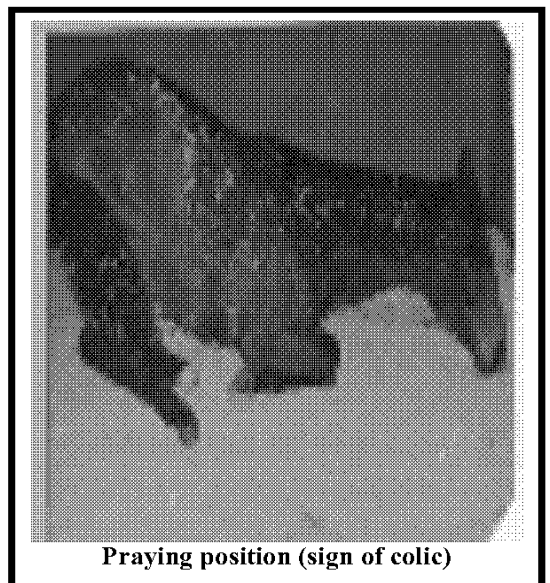
–Acute intestinal obstruction

NB:- *Peristaletic movement may be heard in the thoracic area in case of diaphragmatic hernia and protrosion of intestinal loop in the thorax

-Abnormal peristaltic movement usually Associated with clinical signs As

*Diarrhoea in case of increaed peristaletic movement

*Censtipation in case of decreased peristaletic movement



Praying position (sign of colic)



Verminous colic in donkey

Special methods of examination of digestive system

1-Stomach intubation 2-Liver function test as Got (Glutamic oxalacetic transaminase) or AST(Aspartate amino transferase) GPT(Glutamic pyrulate transaminase) or ALT(Alanine Amino trans ferase) GGT (Gamma Glutamic aminotransaminase),when this enzyme are elevated in the serum they indicated to liver diseases.

3-Endoscopy Either orally or rectally

4-Ultrasonography

5-Abdominal paracentèses

6-Rectal Examination

7-Laparotomy

8-Fecal analysis

Rectal Examination In Equine

1-The animal should be restrained

2-Hand and arms should be thoroughly lubricated with soap and water and the fingers should be introduced in cone- shape through the anal sphincter. And the manipulation should be gently to avoid pain

3-Tetanus anti-toxin should be administrated before manipulation.

4-Evacuation of the rectum (Back raking)

5-Many portions of the alimentary tract can only palpated clearly incase of distention with gases or impaction.

6-Small colon, caecum and the coils of the small intestine can be palpated easily

7- Uterus, urinary bladder and kidney also palpable rectally.

STOMACH INTUBATION

Aims of stomach tubing:

1-Administration of drugs in the stomach (treatment with irritant drug as chloral hydrate or supportive treatment)

2-Treatment of tempany

3-Diagnosis and treatment of choke.

4-Collocation of gastric Juice.

5-Administration of nutrient especially in foals which unable to swallow.

B -Structure of stomach tube:

1-It's consists of plastic or rubber tube has wide proximal opened end which receive a funnel

2-Distelled blunt narrow end which includes more than one pore or openings.

3-Length 2-3 meters (Diameter 1-3cm. According to age.

Young → 1cm. In diameter, Ponies → 2cm. Adult → 3cm in diameter

Technique of stomach tubing

1-The tube should be lubricated by faslin or paraffin oil to facilitate its insertion. 2-Good restraining of the animal in opposite position of the operator .

3-The stomach tube inserted in the left or right nostril in equine while in ruminant from the mouth by using of mouth gag.

4-Dilate the nostril by one hand the introduce the distilled end of the stomach tube by the other hand.

5-When the stomach tube reaches the pharynx we can make flexion of the head to ensure swallowing the tube. 6-When the stomach tube reach the esophagus the increased resistance can be felt by the operator

7-When the stomach tube presence in the trachea there are:

A-There is no resistance in introducing the tube.

B-The horse often not always cough C-Sound of air

8-We can marking the stomach tube according to the length or distance from the stomach and nostril from external examination of the animal to detect when the stomach tube reach the stomach indicated by the stomach tube reach the signs of nostril

9-Presence of the stomach tube in the stomach can be indicated by.

A-Presence of gurgling sound [sound of the stomach].

B-Presence of sour a dour [odor of gastric Juice].

C-Sudden absence of resistance that presented when the stomach tube pass through the esophagus.

10-If the stomach tube not passes through the esophagus it must be with drown and reinserted again

Withdrawal of the stomach tube:

1-The proximal end should be sealed to prevent escaping of the fluid in the pharynx and nasal passage.

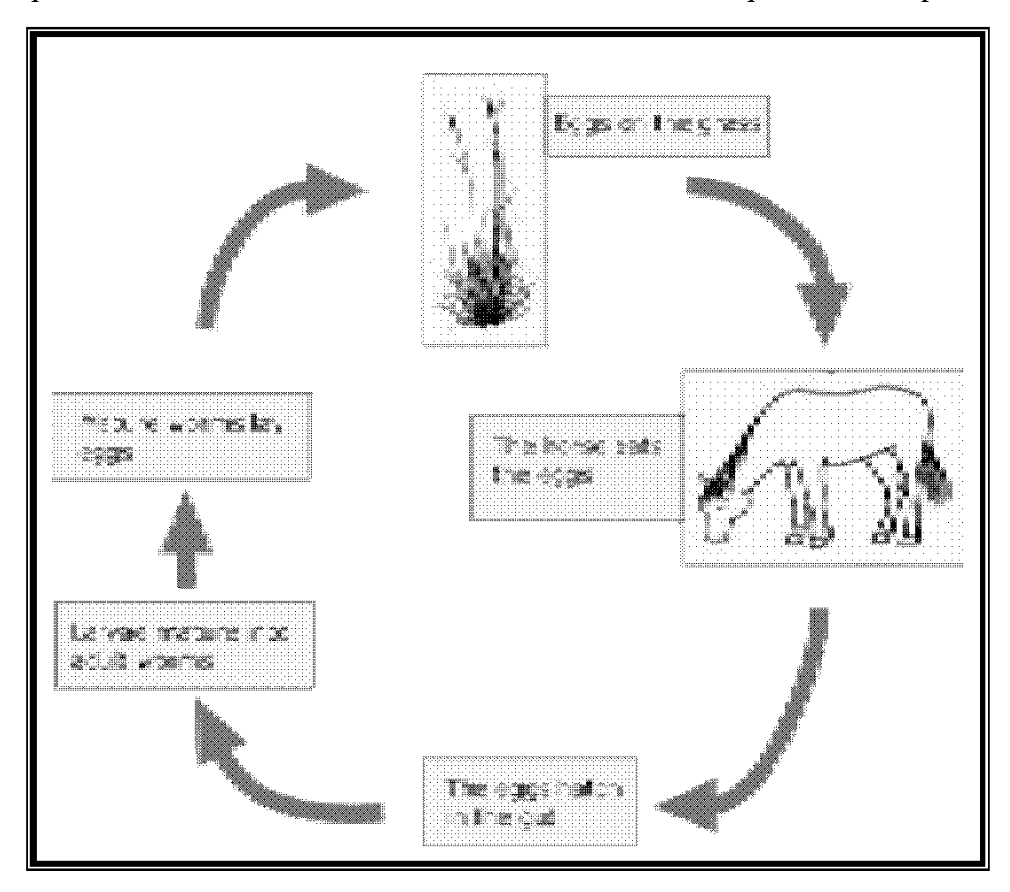
2-The tube should be withdrawn slowly as the stomach tube (distilled end) leaves the esophagus to avoid abrupt contact with the turbinate bones which may cause hemorrhage.

NB – *If the tube is difficult to pass it's usually due to the distilled end reentering the pharynx in a position from which it's not easily to be

swallowed in this case the head should be flexed and or the tube passed through the other nostril.

*Gastrointestinal parasitism is one of the most important problems of the digestive tract in equine which causing many digestive problems as colic, diarrhea as well as low performance of the animal

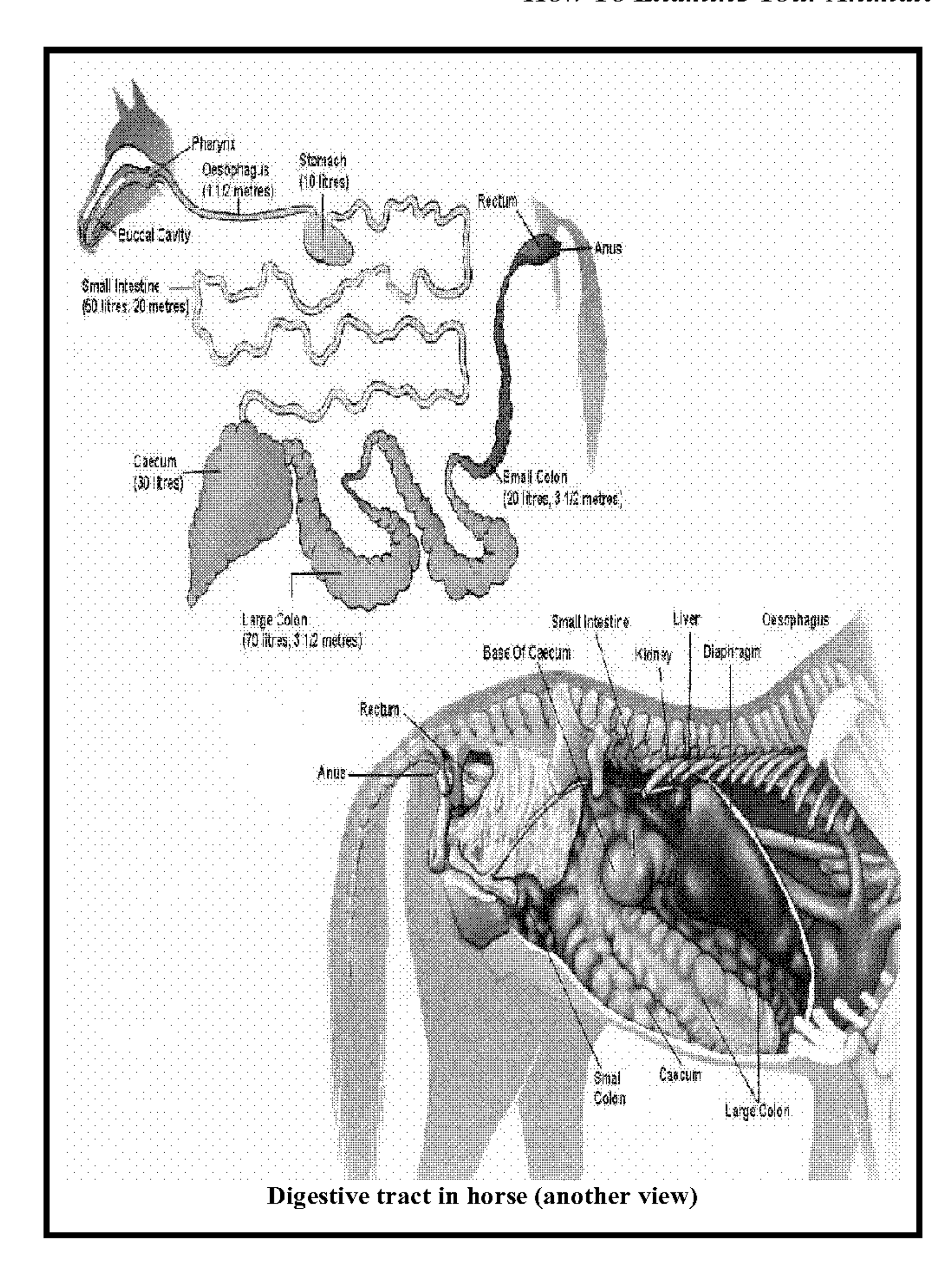
*in the following part we summarized the general connection between the parasites and horse as well as table of the most common parasites in equine



General relation between the parasites and horse

The following table summarises the different species of worms in equine:-

Type	Species	Incubation - Larvae	Incubation - Adult
Large strongyles (Redworms)	Strongylus vulgaris	Intestine Arteries Liver	Caecum Colon
Small Strongyles	Trichonemaspp.	Intestinal wall	Caecum/Colon
Ascarids (Roundworms)	Parascaris Equorum	Liver/lungs	Small Intestines
Threadworms	Strongyloides Westeri	Various tissue	Small Intestine
Pinworms	Oxyuris equi	Intestine wall	Colon/Rectum
Lungworms	Dictyocaulus arnfieldi	Lungs	Bronchi of lungs
Tapeworms	Anoplocephala perfoliata	Intermediate host (mites)	Small Intestine/caecum
Bot	Gasterophilus spp	Stomach	Gadfly (insect)



Digestive tract in horse (another view)

Examination of CNS. In Equine

The nervous system consists of two major divisions

I-Central nervous system.

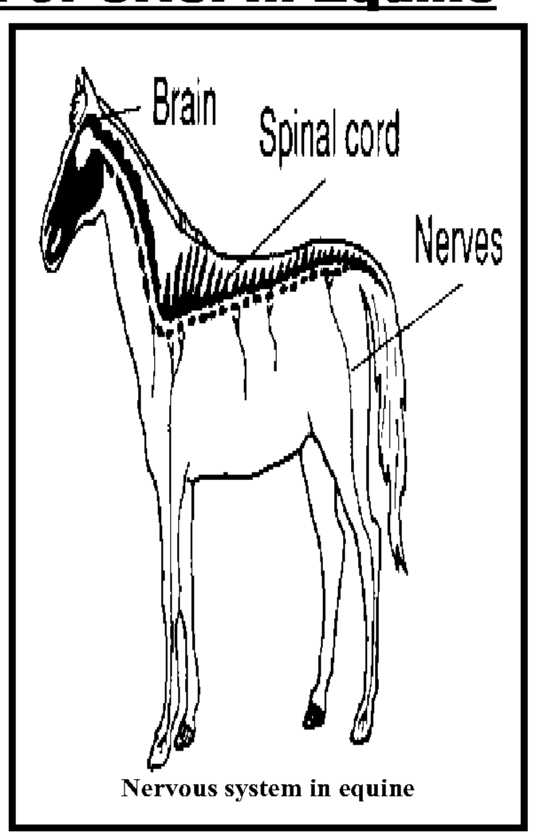
II-Peripheral nervous system

I-CNS: consists of Brain and spinal cord and both are protected by boney structure and consequently can't be examined clinically

II-peripheral nervous system: consists of

-Cranial and spinal nerves. With their ganglia and organs.

-Autonomic nervous system Sympathetic and para-sympathetic



Nervous system in equine

Manifestations of Nervous system disorders

I-Involuntary movements

II-Mental states related disorders

III-Paralysis and paresis.

IV-Abnormal posture and Gait (Mentioned in general inspection)

V-Blindness

(I)-Involuntary Movements

(1)-Convulsions:

Involuntary muscular contraction. Which may be continued and called tonic or tetanic convulsions as in case of tetanus or strychnine poisoning or it may be interspersed by period of relaxation in which the animal appeared quite as in case of Hypomagnesemia

***Convulsions may due to lesions*:**

A- **Intra cranial** causes of convulsion as in case of :

1-Meningitis 2-Brain edema or ischemia

3-Encephalomalicia 4-Cranial Hemorrhage

5- Brain trauma or abscesses.

B-Extra cranial causes of convulsion as incase of:

1-congestive heart failure that leads to Brain hypoxia

2-Hepatoencephalopathy (Ammonia liver diseases)

3-Hypoglycemia 4-Hypomagnesemia 5-Strychnin poisoning

(2)-Tremors :- -Tremors means that continuous and repetitive twitching of the skeletal muscles and it may described as:

-Fine tremors: when it includes or involves few muscles it causes tremors or skin movements only

-Coarse tremors: when it involved large groups of muscles which may leads to movement of extremities

Examples: 1-Febrile conditions

2-Botiulism (Bacterial toxin) → shaker disease in foal

3-Lactating tetany (Hypocalcaemia) in mare

4-Hypomagnesemia (early stage) 5-Hypothermia

(II)-Mental State Related Disorders

1-Syncope :- -Syncope means sudden onset of fainting

Examples:-1-Heart failure that leads to cerebral anoxia.

2- Cerebral Hemorrhage. 3-Electrocoution 4-lighting stroke

2-Aimless waking as in case of: - 1-Hydrocephalus 2-Encephalomalicia

3-Mania:-It is aggressive abnormal behavior as vigorous licking of the skin .

Examples: 1-Furious form of rabies (encephalitis)

2-Polioencephalomalicia (cerebral necrosis)

3-Some toxins as in case of -Acetonemia -Hepatic insufficiency

-Lead poisoning -Carbon tetrachloride toxicity

4-Frenzy

-It is uncontrolled dangerous activity or movement of the animal

Example: 1-Late stage of rabies. 2- Colic in Horse.

2-Photosensitization due to sever external cutaneous irritation.

5-Depression with coma as in case of :-

1-Uremia 2-Toxemia 3- Septicemia 4-Heat stroke

5-Late stage of constipation 6-Hypoglycemia (late stage)

7-Encephalomalicia 8-Hepatoencephalopathy (Hepatic coma)

6-Compulsive walking with head pressing:-

-This is occurred due to increase the interacranial pressure as in odema or hepatoencephalopathy.

III-paralysis & paresis:- Paralysis means that inability to make purposful movements and it's usually due to lesions in sensory and motor nerve. While paresis is weak form of paralysis in which the animal is unable to rise but can supporte itself if it was helped out.

Examples: 1-Terminal stage of encephalomyelitis or meningitis

2-Sever forms of toxic and metabolic diseases of the nervous system as: tetanus, lactation tetany – Hypomagnesemia

3-Focal inflammatory, traumatic or neoplastic lesions in the motor nerve supply of the paralyzed organ.

IV- Blindness:- Blind animal walk into object which it should avoid in normal state .

-Blindness is characterized by absence of menace reflex in which the animal should blink when a menacing gesture is made at the eye with the hand without touching the tactile hair of the eye lids or creating wind w can be felt by the patient.

Examples: 1-Vitamine A deficiency 2-Uremia

3-Infectious keratoconjunctivitis 4-Cataract 5-Panophthalmia

5-Temperory blindness without physical lesions as in acetonemia or impaction due to acidemia.

DIAGNOSTICS REFLEXES

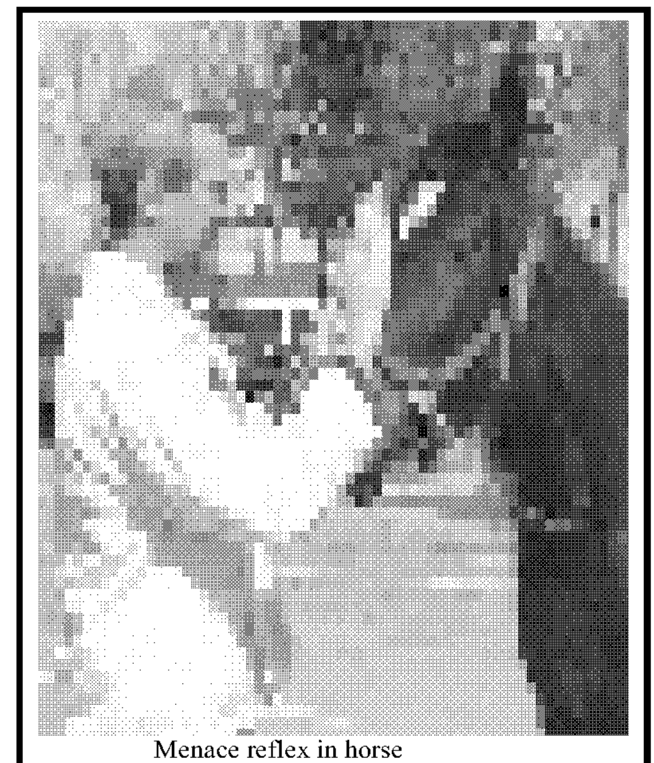
-This is a group of nervous reflexes which indicate the healthy status of the nervous system and it may be

1-Menace reflex:-

-It's a gesture made by the hand in front of the eye without touching the tactile hair of the eye lids or creating a wind which can be left by the patient

-The response of the normal animal is blinking of the eyes

-Absence of menace reflex indicate to blindness



Menace reflex in horse

2-Pedal reflex :- -Stabling of the cornet with pin

-Positive response by withdrawing of the leg

3-Anal or perianal reflex:- -Touching of the anus

-Positive response by contraction and spasm of the anus

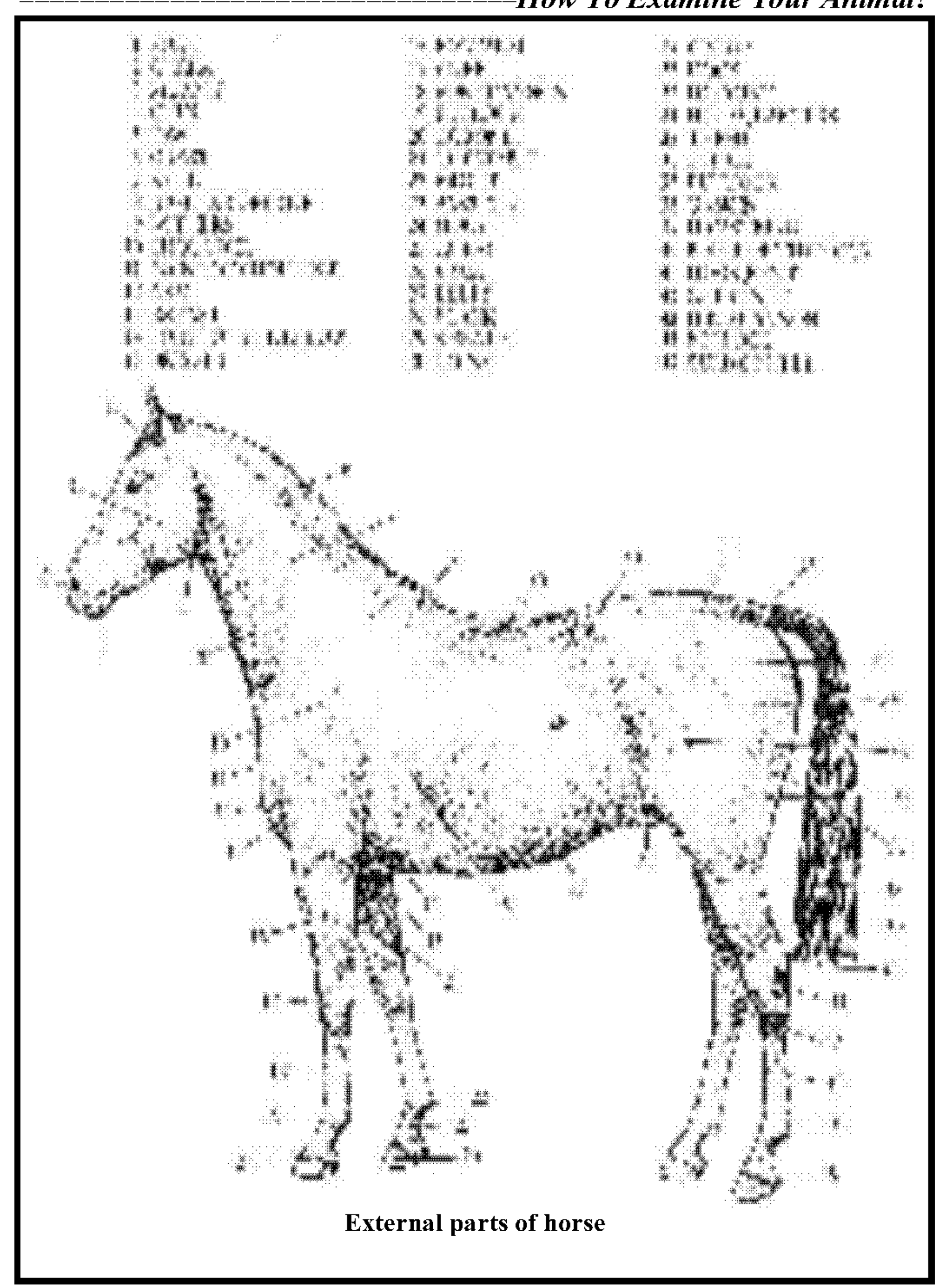
4-Sensitivity test : -Stabling the skin by needle or pin

-Healthy animal respond by shaking the skin

SPECIAL METHODS OF EXAMINATION

1-Examination of the CSF. 2-Radiography 3-Brain biopsy after death

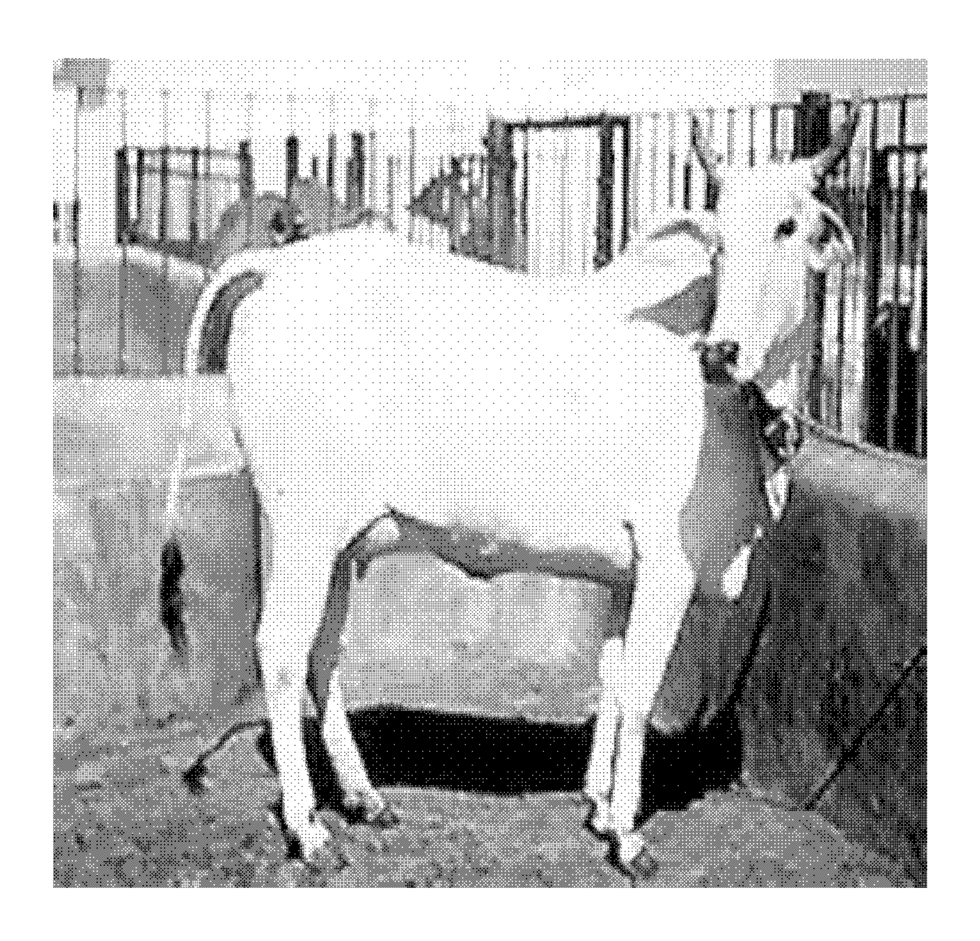
4-Electroencephalography (EEG) 5-Computed Tomography (CT.)



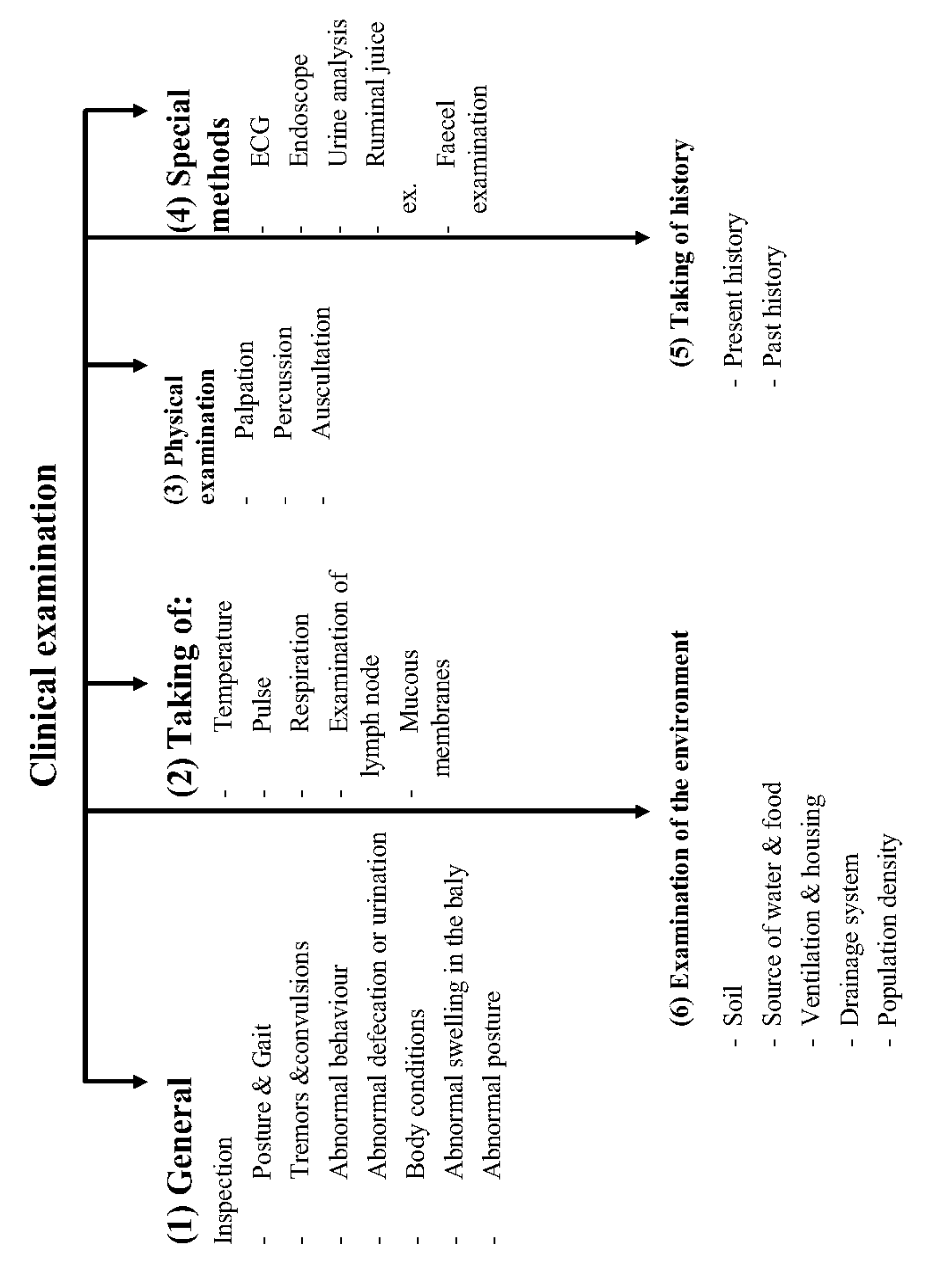
External parts of horse

Chapter No. (4)

How To Examine



Your Large Ruminant?


Clinical examination
(1) General Inspection
- Posture & Gait
- Tremors &convulsions
- Abnormal behaviour
- Abnormal defecation or urination
- Body conditions
- Abnormal swelling in the baly
- Abnormal posture
(2) Taking of:
- Temperature
- Pulse
- Respiration
- Examination of lymph node
- Mucous membranes
(3) Physical examination
- Palpation
- Percussion
- Auscultation
(4) Special methods
- ECG
- Endoscope
- Urine analysis
- Ruminal juice ex.
- Faecel examination
(5) Taking of history
- Present history
- Past history
(6) Examination of the environment
- Soil
- Source of water & food
- Ventilation & housing
- Drainage system
- Population density

General Inspection

*General inspection means that general observation of the animals prior to examination to detect the signs of health and the following points:

1- Posture And Gait or Attitude

(I)-In coordination and ataxia as in case of:

-Hypoglycemia (ketosis). -Polio encephalomalica. -Hypomagnesaemia

-Laminitis or foot rot -Late stage of impaction -FMD

(II)-Lateral recumbency and the head is reflected on the shoulder toward the flank region as in case of → hypocalcaemia (Milk fever).

(III)-Arched back and abduction of hind legs → colic or urine retention.

(IV)-Abduction and rotation of the elbow outward → pleurisy or traumatic pericarditis.

(V)-Curvature of the long bone → rickets in young animals or osteomalicia in adult ones.

(VI)-Sternal or lateral recumbency → downer cow syndrome.

2- Body Condition:

****-Thin or emaciated body condition as in case of :***

-Heavy infestation by intestinal parasitism(ascariasis or fascioliasis…ect.).

-Heavy infestation by external parasitism (ticks, lice or fleas).

-Zinc, copper and Vit. A deficiency

-Long period of anorexia or dehydration.

-Chronic hypomagnesaemia & ketosis.

3-Abnormal Attitude

(I)-Praying position → Laminitis.

(II)-Recumbency with "S" curve neck. → Hypocalcaemia

(III)-Recumbency with hyperexcitability. → Hypomagnesaemia

(IV)-Hind feet under body and for legs extend in front of the body and reluctant to stand → Laminitis or sever forelegs lameness.

(V)-Erected ear, elevated head & tail → Tetanus or bloat.

(VI)-Arched back, anorexia and abducted elbow (painful stance) → peritonitis, pleuritis or pericarditis.

(VII)-Tenesmus → Vaginitis – Rectal irritation / Coccidiosis – Rabies – Hepatic failure or constipation or sever enteritis.

3- Tremors And Convulsion: as in case of:

-Fear or excitation. –Hypothermia -Strychnine poisoning

-Hypocalcaemia – Hypomagnesaemia.

-Vitamin – E and selenium deficiency -Organ phosphorous poisoning.

-Tetanus and febrile conditions or hyperthermia.

4- Abnormal Behavior : as

-Vigorous licking of the skin as in heavy infestation by external parasites.

-Excessive aggression as in rabies.

-Head pressing "as in ketosis or lead poisoning or brain disease.

5- Defecation, Eating , Urination And Respiration:

*Will be discussed later.

Animal Description In Large Ruminants

*It is very important to take the animal description which may help in taking of the history and nature of the disease as there are age specific and species specific disease so animal description include the following points:- 1- Sex 2- Age 3- Breed

4-Physiologica state (pregnancy, lactation …..etc.)

5- Aim of breeding either for milk or meat production.

Signs of Health in Large Ruminants:

-Moist muzzle

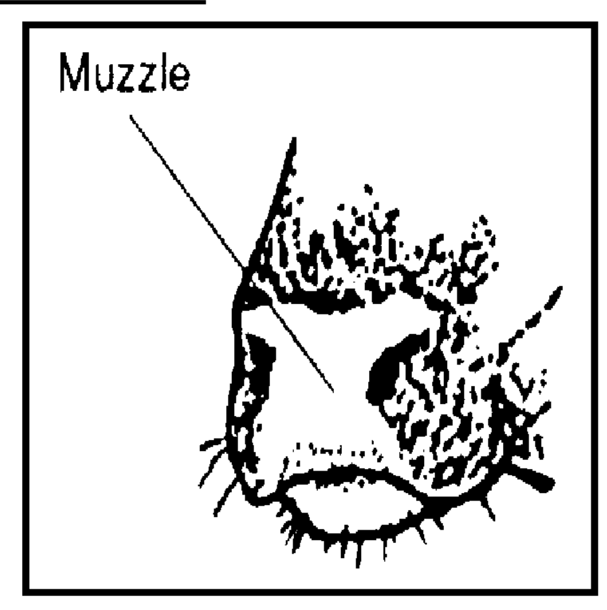
- Good rumination.

-Normal gait and attitude

-No ocular or nasal discharge.

-Normal appetite and rumination.

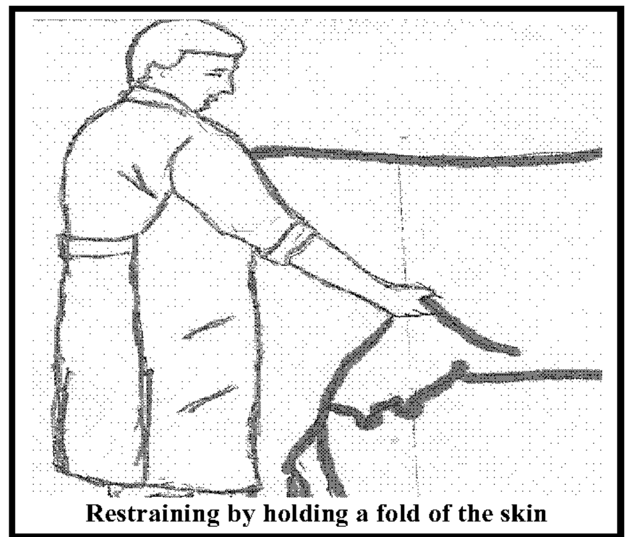
-Normal pulse, respiratory rate & body temperature.



Restraining of the animal and sites of injection:-

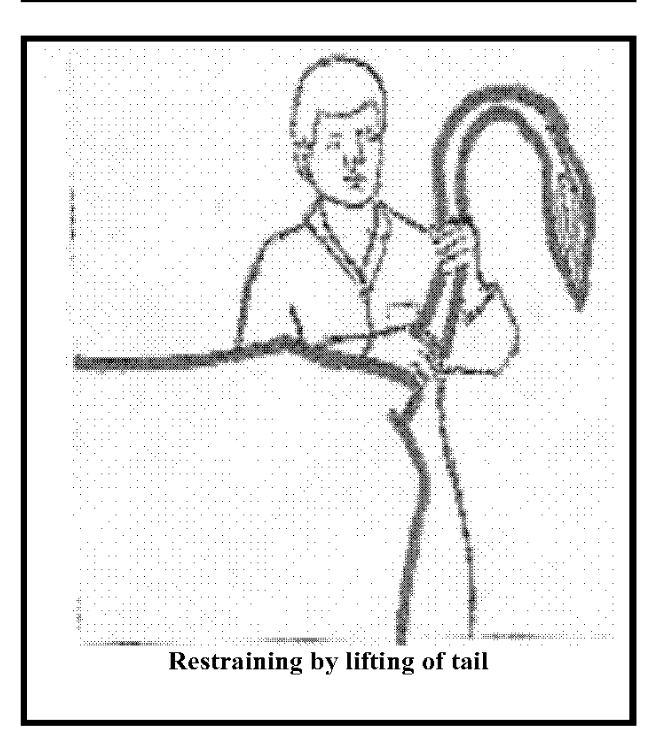
1-Restarining as showed in the diagrams.

*Holding a fold of the skin in the flank region



Restraining by holding a fold of the skin

*Lifting of the tail

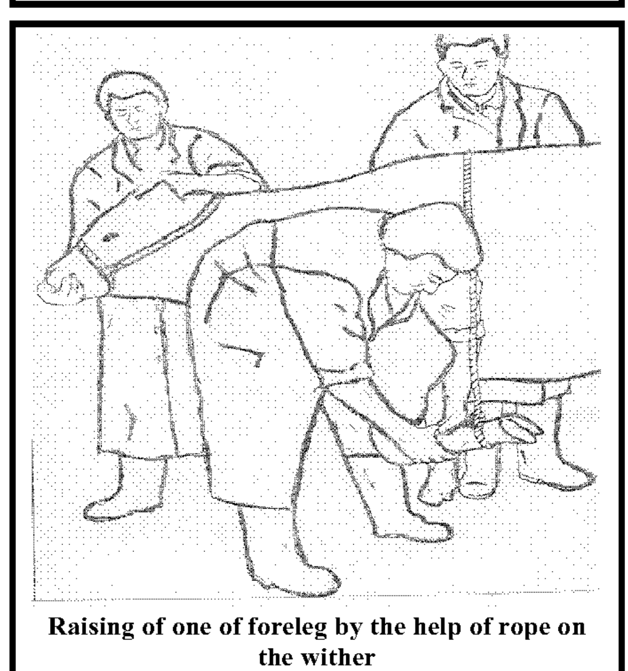


Restraining by lifting of tail

*Raising of one of the foreleg either by hand or by rope on the wither.

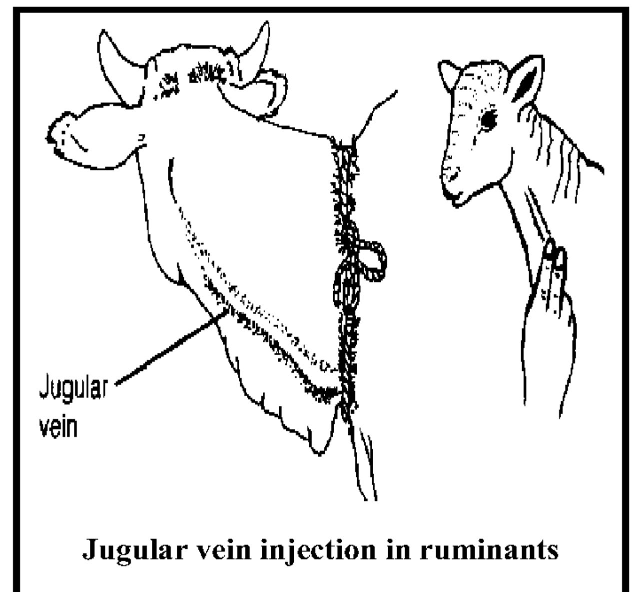


Raising of one of foreleg by the hand



Raising of one of foreleg by the help of rope on the wither

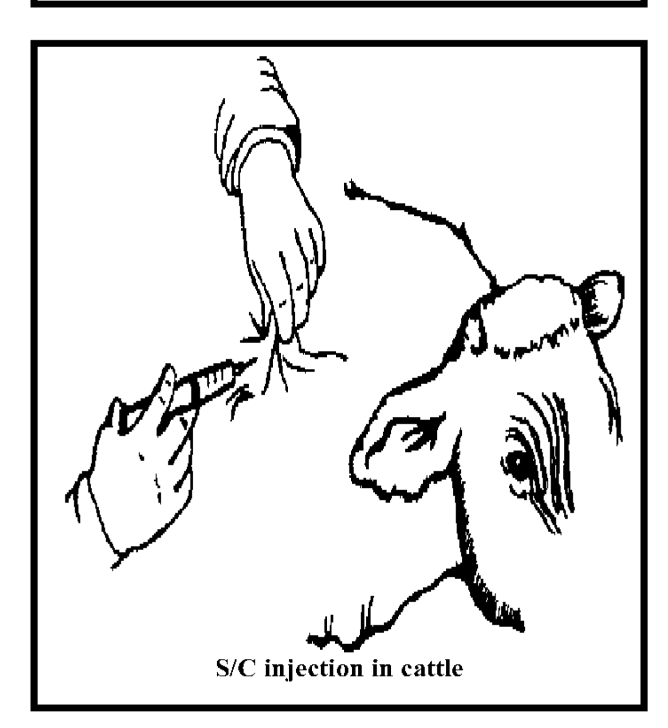
2-Injection of intravenous in the jugular vein.



Jugular vein injection in ruminants

3-Injection of S/C. in the head or shoulder area.

4-Injection intramuscularly in the area of neck, thigh or brisket muscle.



S/C injection in cattle

Physical Examination Of Large Ruminants

(I)- Palpation : 1-May be external palpation which may be direct by using of hand or indirect by using of probe as in case of deep wound.

2-It may be internal as in case of rectal palpation for :

-Examination of the rumen. -Pregnancy diagnosis

-Examination of the urinary bladder & kidneys.

Types of Palpation :

1-Resielent → as normal palpation of healthy rumen.

2-Doughly → as palpation of the rumen on case of impaction, abscess or edema.

3-Emphysematous: as in →subcutaneous emphysema. or ruminal tempany

4-Firm → as palpation of normal superficial lymph node.

5-Hard or solid: as palpation of bone.

6-Fluctuating as palpation of intestine specially in case of sever diarrhea.

(II) Percussion: Percussion is of low value in large ruminant due to large thickness of the skin but generally it may be:

1-Resonante → as percussion over gas containing organ.

2-Tympanic → as percussion over Para nasal sinuses or tempany

3-Dull → as percussion over heart or impaction.

(III) Auscultation: may be: 1-***Vesicular*** sound as normal sound of the lungs.

2-Lubb. Dupp. As normal sound of the heart.

Body Temperature In Large Ruminants

1-Taking of body temperature is one of the most important points which should be taken during examination of diseased animal to detect:

-Normal animal (normal body temperature).

-Diseased animal (abnormal body temperature) which may be:

A-Increased more than normal (Febrile infectious disease).

B-Increased more than normal (hyperthermia non- infectious diseases)

C-Decreased than normal (hypothermia)

2-Body temperature is taken from rectum by using of blunt pull thermometer.

3-If body temperature was not be taken from the rectum, it may be taken from vagina in which the temperature is more than that of rectum by 0.5°C or from the axial in which the temperature is less than that of the rectum by 1.0°C.

4-Normal range of body temperature of the large ruminant is :

-In adult animal → 37.5 – 39.2°C. -Up to one year → 37.8-39.6°C.

How to take the body temperature of animals

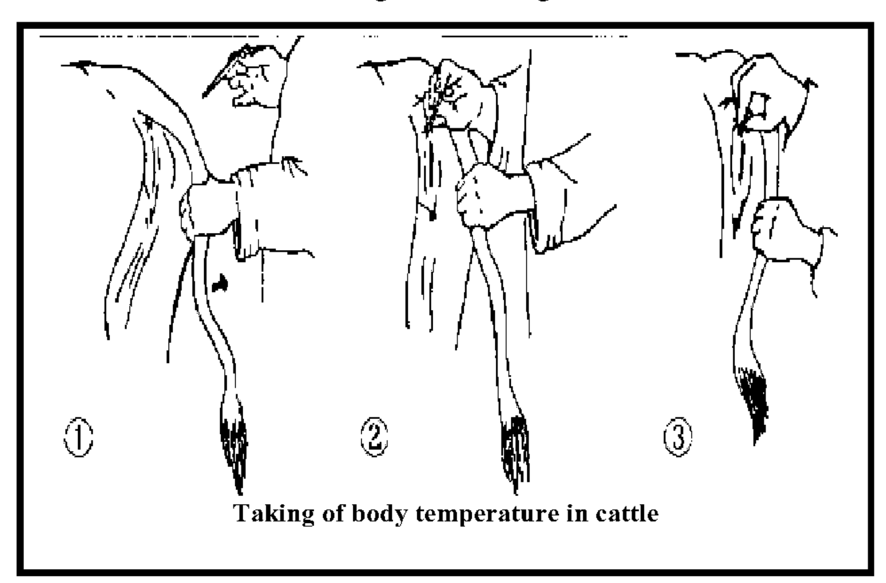
1- Control the animal. 2- Move the tail to the side.

3- Put the thermometer gently into the anus, as far as possible.

4- Hold the thermometer at an angle so that it touches the wall of the rectum. Keep a firm grip on the thermometer, if the animal defecates or coughs the thermometer could come out or go into the rectum.

5- Hold the thermometer in place for half a minute. If you do not have a watch count slowly up to 30 (one, two, three,……..…thirty).

6-Remove the thermometer and wipe it if necessary and read it. Do not touch the bulb as this could change the reading.



Taking of body temperature in cattle

Clinical Significance Of Body Temperature:

(I)-Hyperthermia: *Which means that elevation of body temperature than normal due to physical agent.

Examples: 1) Heat stasis 2) Sun stroke

(II)-Hypothermia: *Which means that lowering of body temperature than normal level. ***Examples:***

- Hemorrhage, dehydration and anemia. -Diseases of the brain.

-Prior to death except in case of tetanus & hypomagnesaemia.

-Exposure to cold weather for long period especially in newly born animals.

-Impaction, tempany and parturient paresis due to circulatory collapse.

(III)-Fever:

*Fever means that elevation of body temperature than normal level due to infectious, surgical or chemical causes.

-Fever mainly occurs in three stages as the following:

A-Increment stage: - Stage of elevation of body temperature.

B-Fastigium or acne stage: Stage of maximum elevation of temperature.

C-Decrement stage; Stage of lowering of body temperature to its normal level.

Etiology Of Fever:

A-Septic or infectious causes: due to bacterial, viral or protozoa infections.

B-Aseptic or chemical causes: as due to vaccination as vaccine of BCG against TB or other sensitivity test or due to surgical tearing of the tissues.

Signs Of Fever:

1- Elevation of body temperature than normal range.

2- Congested mucous membrane. 3- Tremors in early stage.

4- Increase the respiratory and pulse rate.

5- Systemic disturbances according to the affected systems.

6- Dry muzzle – dullness.

7- Anorexia and ruminal stasis or tempany.

Treatment Of Fever:-

*In any febrile conditions there are some of pointes should be taken in our considerations because there are fever what so called unrecognized fever or fever with unknown cause in which the only have higher body temperature than normal level with the general clinical signs of the fever without any specific signs of certain disease (i.e. the febrile condition stile in the incremented stage) so we have make the following steps:-

1- Physical lowering of the body temperature by cold bath or cold fomentation.

2- Placing the animal in good ventilated place.

3-Administration of antipyretic or analgesic drug as Novalgin, Vetragin, Novacid in the dose about 1 ml. / 10 kg bwt. Intravenous or intramuscularly rout

4-Using of anti-inflammatory drugs have a good masking effect on the fever as Dexamethason, Phenylbutazon or Flinoxin megliunen or acetyl salicylic acid preparations (with the precautions of using of anti-inflammatory drugs).

5- Administration of broad spectrum antibiotics as Oxytetracycline preparations or penicillin streptomycin preparations until recognizing the main cause of the fever or making sensitivity test.

6-Multivitamines, tonics or fluid therapy depend upon the physical conditions of the animal.

Taking Of Pulse In large Ruminants

*Taking of pulse is very important in examination of animal because it gives good view about hart or circulatory system in general. There are considerable points which should be taken during taking of pulse:

(1) Site of Taking Of Pulse:

1-Pulse as we know should be taken from an artery and this artery should be: Superficial and medium sized artery .and Pass in adherent to solid structure as bone or tendon to be easily to be palpated.

2-Pulse taking in large ruminants from:

-Middle coccygeal artery. -Facial artery -Median artery.

N.B.: *Taking the pulse from middle coccygeal artery is preferable because we can take the pulse and respiratory rate at the same time but it's not preferable due to it's small pulse due to it's small artery and presence of fecal contamination at these area.

*If the pulse wave can not be detected because of restlessness of the animal, generalized muscle tremors or obesity ………etc. the heart rate (beat) are counted with the aid of stethoscope if necessary.

(II)-Pulse Rate :

1-Pulse rate means that the numbers of pulse wave per minutes.

2-Normal pulse rate in the:

Cattle → 55-80 p.w./min. Calves → 100-120 p.w./min.

3-***Tachycardia as in case of:***

-Toxemia, septicemia – Hypomagneseima.

-Hyperthermia, febrile conditions.

-Fear and excitement and pain conditions.

4-Bradycardia as in case of:

-Hypothermia and prior to death. -Traumatic reticulitis.

-Brain diseases. -Weakness – Prior to death.

(III)-Pulse Rhythm:

1-Pulse rhythm means that it's the time interval between successive pulse waves.

2-In cattle the pulse rhythm is regular.

3-Irregular pulse rhythm as in case of :

-Myocardial forms of vitamin E-selenium deficiency.

-Convalescence stage of pneumonia or febrile and toxemic conditions.

-Myocarditis or a trial fibrillation.

4) Pulse Amplitude:

1-Pulse amplitude means that it's the degree of digital pressure that required for obliteration of pulse waves.

2- Decrease the pulse amplitude as in myocardial weakness.

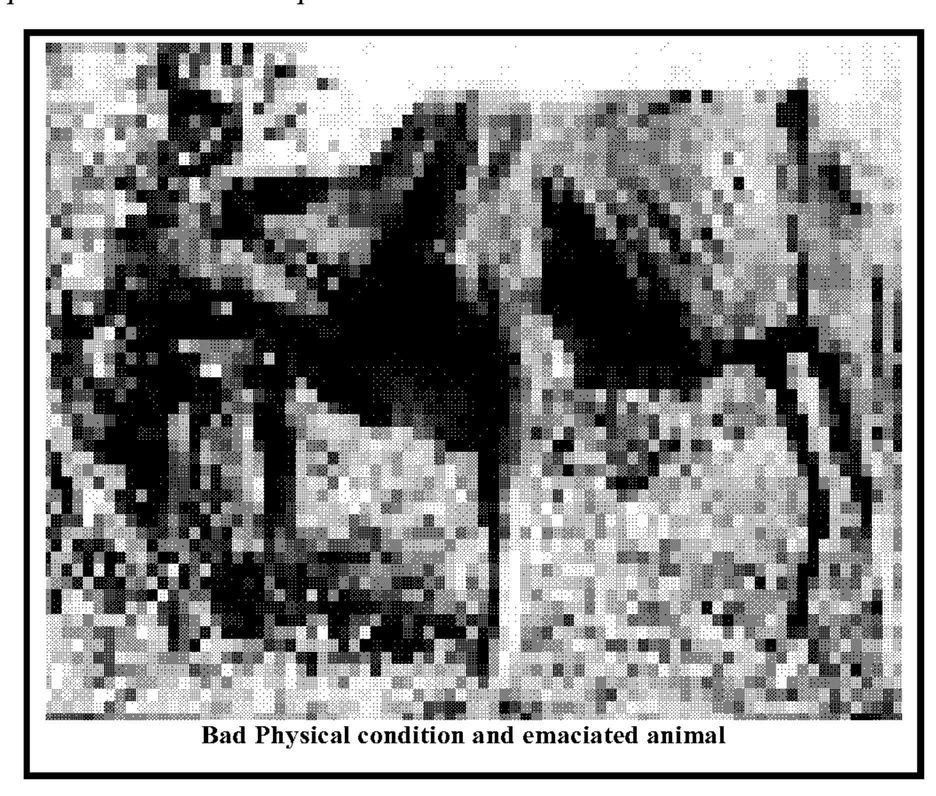
3- Increase the pulse amplitude as in valvular stenosis – tetanus.

3-Jugular vein pulse (JVP) which may be: ***True*** as in case of traumatic or non traumatic pericarditis or tricuspid valve insufficiency.

False: as in lean or emaciated animal.

How you can differentiate between : False J.V.P. / True J.V.P.?

*By application of digital pressure over the jugular vein in the jugular furrow to obliterate the pulse wave in the middle or lower third of the neck so if the pulsation remain presented this is indication of that the pulsation not originated from the jugular vein and mean s that this pulsation is false jugular vein pulsation but if it is disappeared after the digital pressure this indicated that this pulsation originated fro the jugular vein and mean that this pulsation is pathological or true jugular vein pulsation as in case of percarditis



Bad Physical condition and emaciated animal

Respiration In Large Ruminant

(1) Type: 1-Respiration in large ruminants is abdominal respiration.

2-Abnormal type may be:

-***Wholly thoracic as in case of :***

-Peritonitis -Reticuloperitonitis. -Impaction or tempany.

-Wholly abdominal:

-Traumatic pericarditis. -Sever pneumonia or pleurisy. -Fractured rib.

(II)-Rate:

1-In adult:- 10-30 Resp. cycle / min. In calves: 15-40 Resp. cycle / min.

2-Respiratory rate can be detected clinically by:

-Observing the movement of the flank region.

-By using of stethoscope. -Placing hand in front of the nostrils.

3-Abnormal rate may be:

A-Hyperpnoea or polypnoea (↑ in rate) as in case of:

-Fear and excitation or pain conditions.

-Febrile diseases or hyperthermia.

-Pulmonary or cardiac diseases.

-Anemia as compensatory to anemic hypoxia.

B- Oligopnoea (↓ in rate) as in case of:

-Brain diseases – Uremia. -Obstruction of the upper respiratory tract.

(III)-Respiratory Rhythm:

1-Means that the time interval between 2 successive respiratory cycle.

2-As we know respiratory cycle consists of inspiration, expiration and pause (normally expiration is slightly longer than inspiration).

3-Abnormal respiratory rhythm may be:

A-Prolonged inspiration as in case of:

-Stenosis or obstruction of the upper respiratory tract.

-Rhinitis or laryngitis. -Malignant head catarrhal fever.

-Rinder pest or calf Diphtheria.

B-Prolonged expiration → occurs when normal lung collapse not takes place as in case of:

-Pulmonary emphysema. -Pulmonary edema.

-Fractured rib. -Parasitic bronchopneumonia

-Chronic interstitial pneumonia.

(IV)- Respiratory Depth or Amplitude.

1-Means that the strength of respiratory movement and it's may be:

2-Increased [labored respiration] as in case of:

-Stenosis or obstruction of upper respiratory tract.

-Fever – Pulmonary edema or Emphysema.

3-Decreased [shallow respiration] as in case of:

-Pain condition. -Traumatic pericarditis.

-Pneumonia, pleurisy – Acidosis. -Tempany or impaction.

Superficial Lymph Nodes In Large Ruminants

1-Prescapular or superficial cervical lymph node: in the anterior aspect of the scapula slightly dorsal to shoulder J.

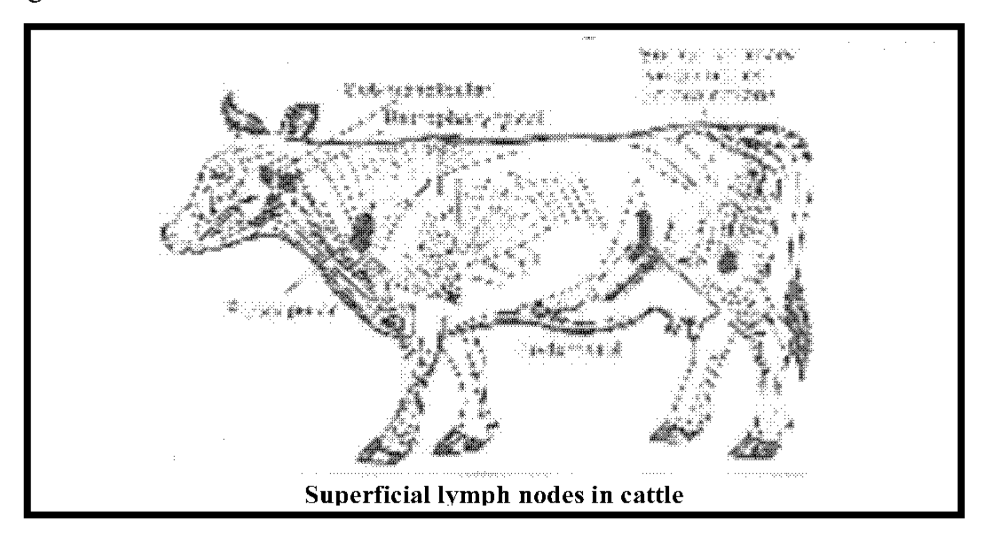
2-Prefemoral or precrural lymph node: in the anterior aspect of the femur slightly dorsal to stifle joint.

3-Sub-maxillary lymph nodes: they lie behind the intermaxillary space near to the angle of the jaws.

4-Supramammary lymph node: they are situated in the premium at the base of the udder and can be palpated by both hand from the upper 1/3 of the udder and directed toward the perineum.

5-*Superficial inguinal lymph nodes*: situated at the base of the scrotum.

6-Pharyngeal lymph nodes: A-Retropharyngeal L.n. → Posterior to the pharynx. B-Sub-parotid or Parapharyngeal L.n.→under the parotid salivary gland .



Superficial lymph nodes in cattle

Normal Characters Of The Lymph Node:

1-Size → lymph nodes vary greatly in large animal but generally it's larger in young animals than adult.

2-Consistency → Firm on palpation.

3-Surface → Lobulated in larger L.n. but generally the surface is smooth.

4-Temperature → Take the normal skin temperature.

5-Pain → Painless on palpation.

6-Skin → Movable freely over the surface of examined lymph node.

7-Movement → Mobile in relation to the neighboring tissues.

Abnormalities of Lymph Node:

1-The lymph node may be enlarged and inflamed as in case:

-Blood parasites –Actinobacillosis. -3 days fever [ephemeral fever].

-Caseous lymphadenitis (corynebacterium) or edematous skin disease.

-Inflammatory reaction to wound. -Lymphosarcoma. -Mastitis

N.B.

*Enlargement of lymph nodes may load to other disturbances as :-

*Enlargement of retropharyngeal lymph node may leads to dyspnoea or dysphagia.

*Enlargement of superficial inguinal lymph node may lead to urine retention due to pressure on the urethra.

*Lymphadenitis → means inflammation of the lymph node.

*Lymphangitis → means inflammation of the lymph vessels.

Mucous Membranes In Large Ruminants

1-Examination of the visible mucous membranes is of great importance to know the general health condition of the animal.

2-Examination of mucous membrane is preferred than examination of the skin because of:

-Thinner epithelium -Lack of hair. -Clear color.

3-Points of examination of the mucous membrane:

A-Color. B-Foreign body or abnormal structure. C-Discharge or swelling.

4-Abnormalities of mucous membrane may due to :

-Defect in oxygenation of the blood. -Several pathological conditions

-Cardiovascular or respiratory diseases.

Types of visible mucous membranes:

-Conjuncitival mucous membrane -Oral mucous membrane

-Nasal mucous membrane -Vaginal or scrotal membrane

Conjuncitival Mucous Membrane

1-Conjuncitival mucous membrane can be examined by opening of the eye lids with gently everting by for fingers and thumb of one or both hand. Nictitating membrane (3rd eye lid) may protrude and examined also.

2-Normal characters of conjuncitival mucous membrane:

-Pale rosy in color, shining and free from any abnormal lesions or discharge.

3- Both eyes should be examined under good source of light.

Abnormalities of the conjuncitival mucous membrane:-:

A-Color: ***1-Pale color as in case of*:** -Anemia except hemolytic one.

-Heavy infestation by parasites. -Dehydrated or debilitated animal.

2-Congested as in case of : Febrile disease. - Hyperthermia

-Conjunctivitis - Trauma -Obstruction of jugular V.

3-Cyanosedas in case of: **-**Brain disease.

-Carbon monoxide poisoning -Cardiovascular or respiratory diseases.

4-Yellowish or Icteric as in case of: -Jaundice. - Leptospirosis

-Liver diseases - Fascioliasis -Hemolytic anemia

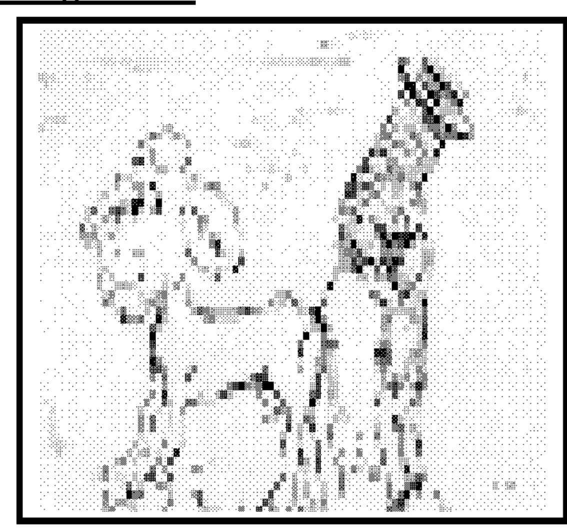
-Hypophosphatemia.

***5-Peticheal hemorrhage as in case of*:-**

Septicemia – Phosphorus poisoning or sever constipation or laminitis.

B- Swelling and discharge as in :

*Conjunctivitis
*Cattle plague
*Trauma
*Infectious keratoconjunctivitis (IKC)
*Malignant catarrhal fever.



Urinary System In Large Ruminants

Pointes of examination:-

(A)-Manifestation of urinary disorders.

(B)-Physical examination. (C)-Special methods of examination.

(A) Manifestations Of Urinary Disorders

1-Posture of urination: Female cattle urinate by abduction of hind legs and raise the tail and urinate and male bull may protrude the penis outside the prepuce and may urinate during walking, eating . . . etc.

-Abnormal posture of urination may be associated with:

-Cystitis. - Urine retention. -Nephritis.

-Defect in spinal cord. -Hypomagnesaemia (spasmodic urination).

2-Frequency of urination:

*Normal frequency up to 9 times / day.

*Frequency may be increased as in case of:

-Cystitis. -Calculi (incomplete obstruction)

-Increase the fluid intake especially in winter -Injection of diuretic.

*Frequency decreased as in case of:

-Dehydration. -Urethral obstruction. -Diarrhea.

3- Anuria & Dysuria:

*Anuria means that complete absence of urination which may be associated with painful urination (dysuria), while stranguria means that dripping of urine as in case of:

-Cystitis. -Urethral calculi. -Urethritis.

-Spinal cord trauma or pressure. -Hemorrhage into urinary tract.

***4- Haematouria*:** Means that, presence of blood in the urine as in case of:

*Blood parasites. * Hypophosphatemia. *Pyelonephritis or cystitis

*Trauma in the kidney or urethra. *Urolithiasis or urethritis.

*False use of urethral catheterization. *Malignant catarrhal fever.

5- Pyuria: Means that, presence of pus in the urine as in case of:

*Inflammatory lesions in the *Pyelonephritis.

*Abscess in the kidney, U.B. or urethra.

Physical Examination Of The Urinary System

I- Palpation :

(I) Kidneys

1-Palpation of kidney in large ruminant usually takes placed by the rectal palpation. We can palpate the caudal pole of the right kidney and the left kidney can be palpated easily during this procedures in small and medium sized animals.

2-Normally left kidney its position varies according to the degree of fullness of the rumen as when the rumen is fully distended, the left kidney present ventral to the transverse process of 5 & 6^{th} lumber vertebrae. While when the rumen not distended, the left kidney lies ventral to transverse process of 1, 2 or 3^{rd} lumber vertebrae "***physiologically wandering kidney*".**

3- Normally right kidney present ventral to transverse process of the 2, 3rd lumber vertebrae.

Points Of Examination :

***A-Size*: 1- Increased as in case of:**

-Neoplasm. -Hydronephrosis.

-Acute nephritis. -Pyelonephritis.

2-Decreased as in case of :

-Dehydration. -Advanced chronic interstitial nephritis.

B-Pain reaction: Usually in acute conditions as nephritis.

C-Condition of the surface:

*Normally the surface of the kidney in cattle lobulated, so abnormally loss of the lobulation may occurred in neoplasm, abscesses or hydronephrosis pyelonephritis or nephritis

(II) Ureters

1-Normal ureters are not palpated during rectal examination.

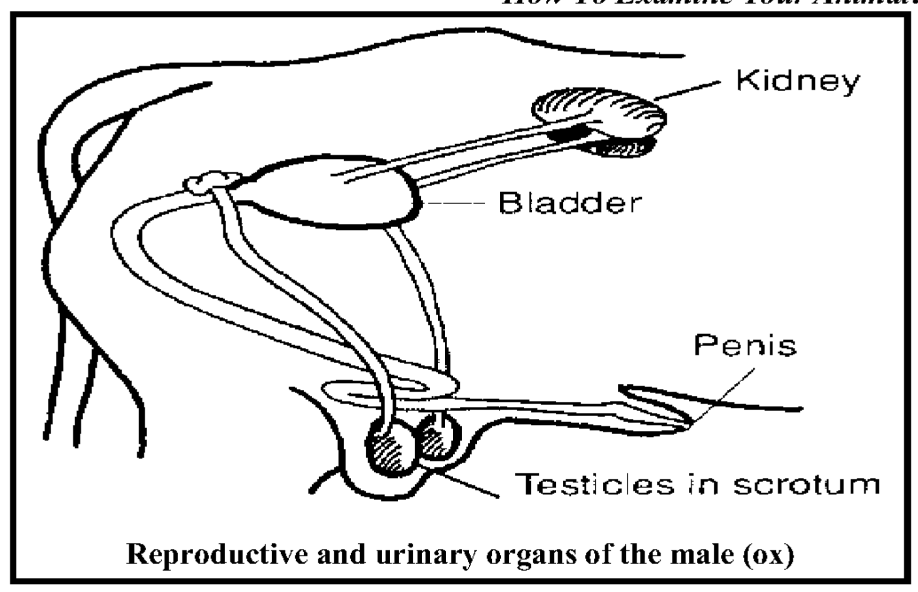
2-May be palpated as in:

*Pyelonephritis.

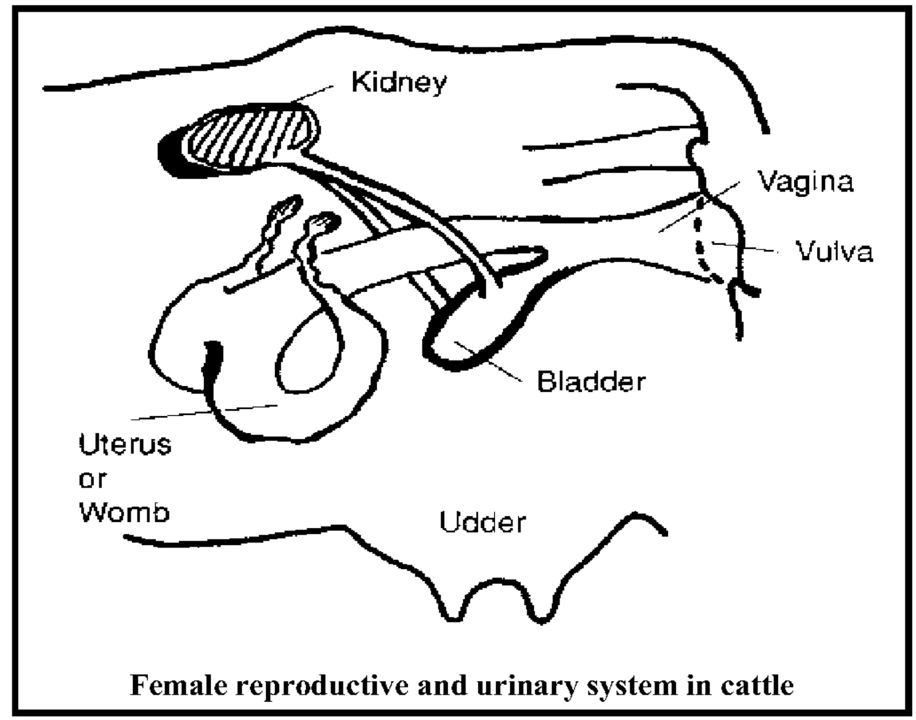
*Urine retention (calculi)

(III) Urinary Bladder

1-The urinary bladder lies under the rectum in male animal while under the vagina in female.



Reproductive and urinary organs of the male (ox)



Female reproductive and urinary system in cattle

2-When the urinary bladder full, it extends further into the abdominal cavity.

3-The urinary bladder can be palpated from the rectum or vagina if necessary as in urethral catheterization.

4-Over distension of urinary bladder occurs in case of urine retention or calculi [in this case it should be felt with care to avoid its rupture].

5-Palpation of the urinary bladder may be painful as in cystitis.

(IV)- Urethra

1-In female the external urethral orifice can be examined by using vagina speculum and its present at the floor of the vagina 8-10 cm. from the vagina.

2-Pelvic portion of the urethra can be examined rectally

3-Segmoide flexure is characteristic in male urethra and it's considered as the predilection sites of urolithiasis.

NB:

*Animal can urinate about 12-15 liters per day or in the average of 1 ml./kg Bwt. / hour. For example if the animal body weight is 500 kg. so it can urinate 1 X 500 X 24 = 12000 ml (12 liters/day).

Special Methods Of Examination Of Urinary System.:

1-Uretheral catheterization mentioned before in equine part.

2-Ultrasonography. 3-X-ray 4-Urinanalysis 5- Rectal examination

6-Kidney function test (urea and creatinine level).

Respiratory System In Large Ruminants

(I)-History Taken About Diseases Of Respiratory System

1-Has the patient cough? If so what its character? (Serous, productive, stained).

2-Has there been a nasal discharge (serous, mucoid, or stained with blood).

3-Has the animal wheeze?

4-Is the breathing more rapid?

5-Has the animal dyspnoea?

6-Ask about previous illness and medication? (Past history)

7-Has the animal sneeze?

(II)-Manifestations Of Respiratory Diseases In large Ruminants:

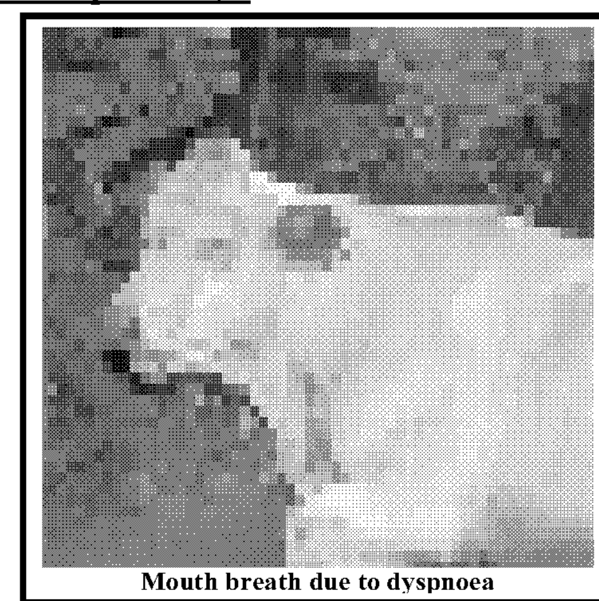
1-Dyspnoea: (difficult respiration):-

Manifestations of dyspnoea:

-Mouth breath.
-Dilated nostrils
-Pumped anus

-Abnormal respiratory rhythm or type

-Extension of head and neck -Cyanosis of mucous membrane



Mouth breath due to dyspnoea

Diseases associated with dyspnoea:-

-Stenosis of upper respiratory tract.

-Bronchitis

-Pulmonary odema and congestion

-Infectious bovine rhinotracheaitis

-Pulmonary emphysema.

-Traumatic pericarditis

-Bronchopneumonia

-Impaction

-Anemia

-Tempany

-Choke

-Brain diseases

2-Cough as in case of :

-Bronchitis

-Interstitial pneumonia (viral pneumonia)

-Pneumonia (bacterial pneumonia)

-Catarrhal laryngitis or pharyngitis

-Parasitic pneumonia

-Pericarditis.

-Pleurisy

*Inducing of cough by closure of nostrils or pressure on larynx or tracheal rings.

3-Epistaxis (bleeding from nostrils) as in case of :-

-Trauma

-Pulmonary hemorrhage

-Rhinitis

-Anthrax

-High blood pressure.

-Malignant catarrhal fever

4-Sneezing:

-Rhinitis

-Aspiration pneumonia

-Inhalation of irritant smoke.

5-Nasal Discharges as in case of :

-Bacterial pneumonia -Chronic bronchitis

-Pulmonary edema -Malignant catarrhal fever

-IBR(Infectious Bovine Rhinotracheatitis)

-Gangrenous pneumonia. -Rhinitis

-Pyogenic infection of Paranasal sinuses.

Nasal discharge may be:

-Serous (in early stage of diseases or mucoid in late stage or after secondary bacterial infection).

-Contain gas bubbles.

-Copious (acute diseases or scanty in chronic form of disease).

-Unilateral (in unilateral affection of upper respiratory tract) or bilateral in affection of lower respiratory tract.

-Tinged with blood -With bad odor as in case of neglected case of infection or in gangrenous pneumonia

6-Abnormal Respiratory Sound (stridores) as in case of:

-Choke. -Laryngeal paralysis (roaring sound with inspiration)

-Soft palate paralysis (roaring sound with expiration)

-Fractured nasal bone (roaring sound with both expiration & inspiration)

-Bronchitis and laryngitis or tracheaitis with exculpation

-Enlargement of retropharyngeal lymph node.

7-Involuntary Movement Of Nostrils as in case of :

-Laryngeal edema. –Dyspnoea -Hydrothorax

-Ruptured or paralysis of diaphragm.

8-Abnormal resp. rate, type, rhythm or depth:-

(mentioned before)

Methods Of Examination Of Respiratory System

(I)-Examination of the nasal region & paranasal sinuses.

(II)-Examination of the larynx, pharynx and trachea (area of throat).

(III)-Examination of the lungs and pleura (chest).

(IV)-Special methods of examination.

(I)-Examination Of Nasal Region & Paranasal Sinuses:

1-Signs of health of the muzzle: -Moist muzzle.

-Free from nasal discharge. - Free from of any lesion

2- Nasal discharge. 3- Movement of nostrils. 4-Abnormal sounds are mentioned before

5-Expired air: Can be examined by holding a paper in front of the nostrils to determine it's strength and to detect are there unilateral obstruction or not.

Expired air: has acceptable or aromatic odor but it's may be offensive as in case of:-Gangrenous pneumonia. -Neglected cases of stomatitis.

-Teeth decay. -Accumulation of nasal discharge in the nasal cavity.

-Ketosis (Acetone odor).

6-Paranasal sinuses (maxillary and frontal sinuses).

*Can be examined by:

A-Inspection: - To determine any abnormalities at the area of sinuses.

B- Palpation:-To determine temperature, pain, swelling or fracture.

C-Percussion: Normal sound is → tympanic

-Abnormal sound is → dull as in case of in paranasal sinusitis or empayemia.

****Complications of paranasal sinusitis:***

-Hindrance in mastication. -Nasal discharge.

-Dental fistula. -Inflammation of nasolacrimal duct.

(II)-Examination Of Larynx, Pharynx And Trachea (Throat)

Examination the area of throat occurred by:

A-Inspection: - To determine any swelling at the area of throat which may be inflammatory or non-inflammatory.

B-Palpation:-To determine the nature of any swelling either:

1-Inflammatory as in case of:

-Actinobacillosis. -Inflammation of retropharyngeal LN. -Pharyngitis.

2-Non-inflammatory as in case of:

-Choke -Goiter -Pharyngeal edema

N.B.: *Pharynx in large ruminants can be palpated internally by opening the mouth by using a gas and introducing the hand by the manner in W the palm of hand is dorsal and then run the glottis if the animal show the signs of swelling this indicate healthy pharynx but if not show the signs of swallowing it's indicate pharyngeal paralysis.

-Internal examination of the pharynx, larynx and trachea can be occurred by using of endoscope to detect any lesions in the mucous membrane or lumen.

C-Auscultation: Normal sound is → resembling to "***CH***" letter

-Abnormal sound may be:

1-Dry rales as in case of → Acute bronchitis.

2-Moist rales as in case of → Chronic respiratory inflammations.

3-Harsh sound as in case of → Early stage of pneumonia.

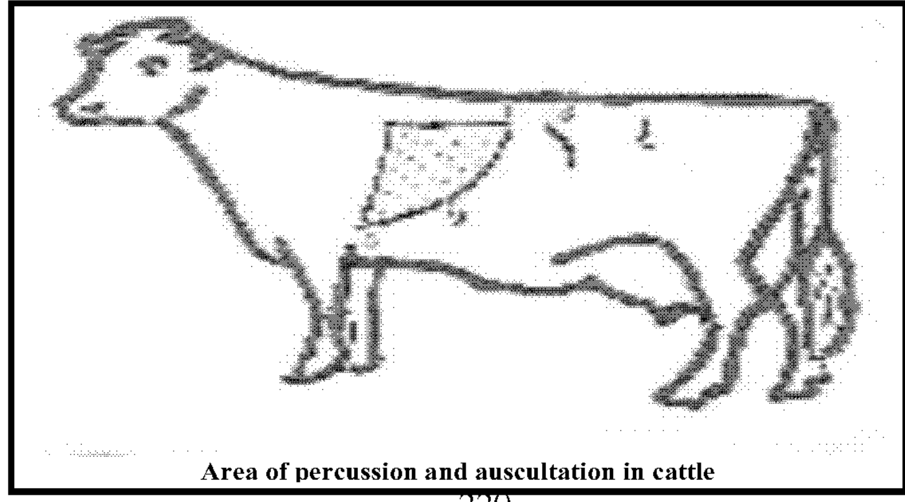
(III)-Examination Of The Lungs & Pleura (Chest)

1-Inspection to determine any abnormal respiratory types rate.. . etc.

2-Palpation: to determine the existence of pain as in case of fractured ribs or pleurisy.

3-Percussion: is of low value in large ruminant because of thick skin.

4-Auscultation: area of percussion and auscultation.



Area of percussion and auscultation in cattle

N.B.: *In the large ruminant there is another area of auscultation called prescapular area which is lesser or more oval in shape which situated in the lower part of the neck in front of the shoulder extremity. From 1^{st} to 2^{nd} or 3^{rd} ribs especially when the foreleg is drown caudally.

*Normal auscultation of the lung: is vesicular sound which resembling to "***V***" sound with inspiration and "***F***" sound with expiration.

*The lung auscultation should be preceded by artificial hyperpnoea by exercising or walking the animal.

Abnormal Sounds By Auscultation:

1-Dry rales as in case of: -Spasm in bronchial muscles.

-Bronchitis – Early stage of pneumonia

2-Mnoist rales as in case of:

-Pulmonary edema -Bronchopneumonia

-Chronic bronchitis -Pulmonary hemorrhage.

3-Crepitant rales as in case of:

-Bronchiolitis -Interstitial pneumonia

4-Emphysematous sound as in case of:-

-Pulmonary emphysema – Pneumothorax.

5-Frictional sound as in case of: - -Pleurisy -Pericarditis

6-Absence (dull) sound as in case of:-

-Tumor -TB. -Consolidation of lung -Lung collapse.

7-Grunting sound:-

Grunting means that forced expiration associated with closed epiglottis and it is usually associated with painful conditions either in thoracic or in the abdominal cavity.

(*) Pulmonary origin of grunting sound are:

-Pleurisy. -Traumatic pericarditis.

-Sever pneumonia -Pulmonary emphysema

(*) Abdominal causes of grunting sound are :

1-Sever pain in urogenital organs as in -Vaginitis –Urethritis -Urolithiasis – Cystitis -Nephritis – Pyometria -Peritonitis

2- Traumatic reticuloperitonitis.

3-Distended organs as: - Bloat – Impaction -Hepatomegaly.

-Abomasal displacement -Acute intestinal obstruction.

N.B. Grunting sound: Usually accompanied with the signs of chest or abdominal pain.

Special Methods Of Examination Of Respiratory System:

-X-rays - Ultrasonography - ECG

- Blood gas analysis - Endoscopies

Skin In Large Ruminants

*Skin is a stratified tissue consists of 2 major layers:-External epidermis.

-Internal dermis with sweat and sebaceous glands.

Functions of the skin:

1-Protects the body from physical, chemical or biological invaders.

2- Plays a role in regulation of body temperature and electrolytes.

3- The main sensory organs.

4- Liberation of vitamin D3 after exposure to sunlight.

Points of examination of the skin:

A-Inspection: 1-Skin coat to detect the presence of: . -Abnormal Color -Ectoparasites –Appearance -Lesions or pruritis burn…….etc.

2- Skin hair to detect presence of alopecia or symptoms of nutritional deficiency as in copper deficiency.

B-Palpation: to determine the skin elasticity and examine the sub-cutaneous tissue or detect the skin temperature and the nature of the presence lesions.

C-Special methods: Skin Scarping Test – Skin Biopsy – Ultraviolet rays examinations.

A-Inspection Of The Skin

(I)-Color Of The Skin Coat

1-It's difficult to see the skin coat color except in hairless area as udder, belly, and inner aspect of the thigh or ears.

2-Normal color is → grayish red.

3-Abnormal colors may be:

-Pale as in case of → Dehydration – Anemia.

-Yellowish as in case of → Jaundice – Haemolytic anemia.

-Inflammatory as in case of → Dermatitis or s/c inflammation.

(II)-Appearance Of The Skin Coat:

1-The skin coat of the healthy animal is shiny and smooth depend upon the activity of sebaceous and sweat glands.

2-Abnormalities may be indicated to the following diseases:

-Mange – Zinc or vitamin-A deficiency.

-Hyperkeratosis – Dehydrated animals.

(III)-Pruritis:- Which manifested in the form of restlessness, and scratching of different parts of the body. As in case of:

-External parasites. -Allergic condition. -Dermatitis. -Mange

B-Skin Lesions:

(I)-Primary Skin Lesions:

1-Macules as in case of → Early stage of pox –Tick bites.

2-Vesicles as in case of → Vesicular stomatitis or FMD

3-Pustules as in case of → Pastular dermatitis.

4-Wheals as in case of → Urticaria – Allergic conditions.

5-Papules as in case of → Eczema – Pox.

(II)-Secondary Skin Lesions:

1-Dundruff or scales or pityriasis as in case of→ -Mange –Vit. A deficiency -Ringworm.

2-Crust or scab as in case of: → - Pox -Dermatitis.

3-Erosion or ulcers as in case of→ FMD -Ulcerative dermatitis -Burns.

C-Examination of Skin Hair

*The most common lesion of the skin hair is **Alopecia,** which means that localized or generalized loss of hair which may be due to:

1-Infectious cause: - Mange – Ring worm.

2-Nutritional causes: Vitamin A or zinc deficiency -Copper deficiency – Cobalt deficiency.

3-Chemicals: as Mercury or Selenium poisoning (selenosis).

4-Physical causes: as in case of burns.

5-Follicular dysfunction or acne disease.

NB. Ectoparasites: Can be detected by necked eye and indicated to skin diseases as fleas, ticks or lice.

D-Palpation Of The Skin

*Palpation of the skin is important to examine skin temperature, skin elasticity and subcutaneous tissues.

(I)-Skin Temperature:

1-Skin temperature is usually within the normal rang of the normal body temperature while the abnormal conditions of skin temperature may be :-

2-Generalized hotness of the skin as in case of:

-Febrile condition. -Hyperthermia

3-Localized hotness as in case of: - Burns – Abscesses – Arthritis – Dermatitis or other localized inflammatory condition as localized hotness of the skin of the udder in case of mastitis.

4- Generalized coldness as in case of Hypothermia, Prior to death – Dehydration – Hypocalcaemia.

(II)-Skin Elasticity: 1-Skin elasticity can be determined by skin fold test by lifting or grasping a fold of the skin in the area of the neck or shoulder area and leave it then detect the needed time for returning the skin fold to its normal condition.

2-***Normal time is→ 1-3 seconds***.

3-Increased time of the skin fold test as in case of:

-Dehydration -Emaciated animals.

N.B.:* Swelling of the Sub-cutaneous tissue may indicate to, Cellulitis or phlegmon due to:-

1- Injection of irritant drugs S/C as chloral hydrate.

2-S/C abscesses – Haematoma – Enlarged lymph nodes. S/C edema.

Cardiovascular System In Large Ruminants

(I)-Regional anatomy of the heart

(II)-Abnormal types of pulse (mentioned before)

(III)-Disorders in the heart (Tachycardia- Bradycardia- Heart block)

(IV)-Clinical examination of the heart (inspection- percussion – palpation and Auscultation)

(V)-Special methods of examination (Electro cardiograph- angiocardiograph and phonocardiograph)

(1) Regional Anatomy Of The Heart

1-The heart consists of 4 chambers (2 atria and 2 ventricles) through which the blood is flow and regulated by the values.

2-The heart is asymmetrical in its position. So it's deviated toward the left side of the median plain of the body.

3- Heart present in the area opposite to 3-6th. Intercostals spare at the left side and opposite to 3-5th. Intercostals space on the night side.

4-There are main four valves in the heart they are:

A- Left atrioventricular valve (mitral valve).

B- Right atrioventricular valve (Tricuspid valve).

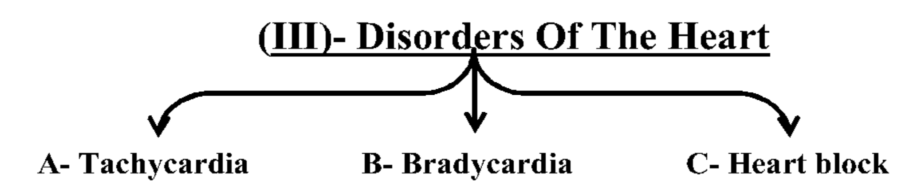
C-Aortic semilunar valve.

D-Pulmonary semilunar valve and their position as in the following table:

Valve	Function	Location of hearing it's sound
1- Tricuspid valve	Guard the right atrioventricular orifice	Opposite of 4th rib about 10cm dorsally from the costo-chondral Junction.
2-Pulmonary semil-unar valve	Guard the orifice of the pulmonary artery in the right ventricle	Opposite of 3rd intercostals spaces opposite to olecranon processes of ulna.
3- Mitral valve	Guard the left atrioventricular orifice.	Mainly opposite to 5th inter costal space.
4- Aortic valve	Guard the orifice of the Aortic artery in left ventricle.	Opposite of 3th rib about 12 cm above the sternal extremity at the level of the shoulder.

(II)-Abnormal Types Of Pulse:- as mentioned before

(III)- Disorders Of The Heart



A- Tachycardia **B- Bradycardia** **C- Heart block**

(1) Tachycardia :

* Tachycardia means increase in the heart rate. Which occurred in the following conditions:

1- Febrile conditions 2- Cardiac hypertrophy

3- Myocardial diseases 4- Temporary hypotension

5- Excitement, fair and pain 6- Anemia and increase of venous pressure

(B) Bradycardia:

* Bradycardia means that decreasing in the heart rate as in case of :-

1-Hypertention (in the arterial pressure) 2-Hypoglycemia

3-Chonic acquired hydrocephalus 4-Hypocalcemia

5- Traumatic reticuloperitonitis with extensive adhesion of diaphragm.

6- Vagus indigestion 7-Jaundice 8-Congestive H.F.

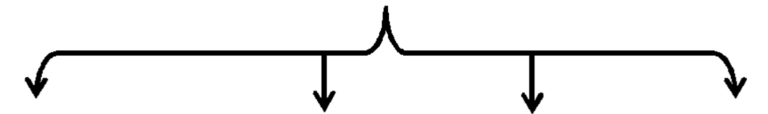
9-Hydropericardium 10-Haemopericardium 11-Pleurisy

(C) -Hart block: "Detected by E.C.G. "

- Heart block means that defecte or delaying in initiation or inhibition or interruption in the conduction of contractile impulse somewhere it's course from pacemaker to the ventricle.

*** Types of heart block:** 1-***Sinoatrial heart block*** as in case of debility.

2-***Atrioventincular heart block*** "1st, 2nd, 3rd, degree"



-Infectious and nutritional-disease with cardiomyopathy or myocarditis.	-Electrolytes imbalances specially K^+	-Rapid injection of calcium specially in milk fever.	-Digitalis poisoning

3- Branch bundle heart block: as in myocardial lesions

(IV) Physical Examination Of The Heart

A- Inspection B- Palpation C- Percussion D- Auscultation

(A) Inspection: is of low value in large ruminants

1-Inspection occurred by observation of the so called "***Apex beat***" of the heart that causing movement of the chest wall over limited area of 5th or 6th intercostals space during cardiac systole.

2-Apex beat can be observed in normal animal with:

* Narrow chest * Thin wall of chest
* Short coat * Good conditioned animal

3-Apex beat appeared clear in the following cases:

-Animal has been subjected to sever exercise. – Fever

-Hemolytic anemia (sever) -Cardiac hypertrophy or dilatation

-Cardiac displacement as in case of thoracic neoplasm, diaphragmatic rupture or hernia.

(B) Palpation:

1-Palpation of cardiac area gives the chance to detect the strength and extent of the cardiac impulse and it's occurred by placing the palm of the hand over the cardiac area and slight pressure is applied to compress the chest wall (need experience clinician).

2-Cardiac impulse is palpable on left side only in large animal and it may be week or absent in the following cases:

-Hydrothorax -Pleurisy -Hyditiosis

-Over distension of stomach or intestine with gases.

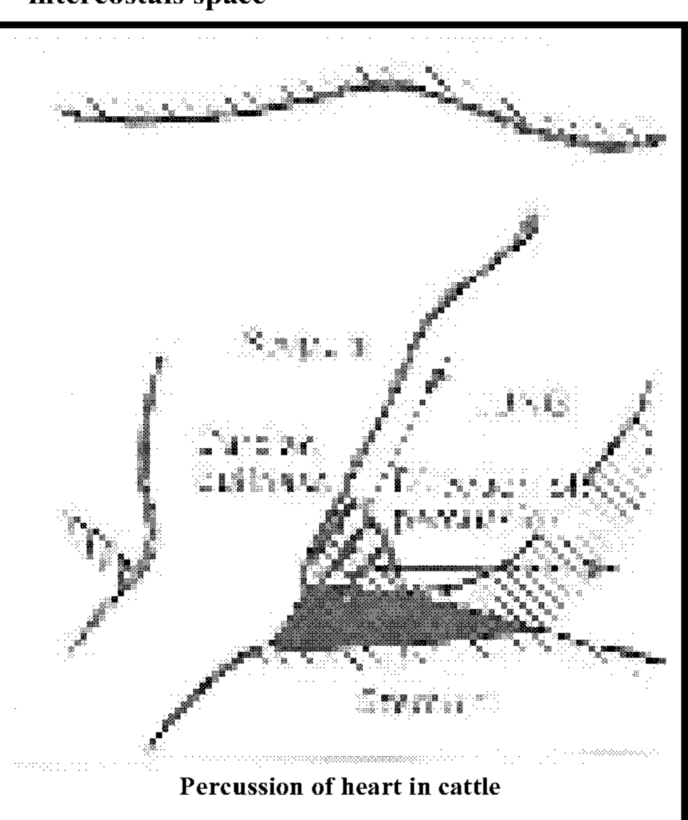
-Mediastinal or pulmonary neoplasm.

-Enlargement of right ventricle, which occurred in case of congenital pulmonary stenosis.

-In extreme cases of valvular insufficiency or stenosis and of developmental defects particularly those involving atrial or ventricular septum. So thrill or vibration may be detected in accessional instances.

<u>(C) Percussion</u>: "At 4th intercostals space"

1-Percussion of the cardiac area provide "Dull sound" because it's gas free organ or musculature organ and determination of area of cardiac dullness needed experiense due to wide variation of skin thickness of the chest wall, breed and individual variation.



Percussion of heart in cattle

2-Area of dullness can be detected by, Percussion over the chest directed downward until detect the area of cardiac dullness with the left for leg is direct for word

"Abnormalities Of Percussion"

Increase of area of cardiac dullness	Decrease of area of cardiac dullness
1-Cardiac hypertrophy or dilatation 2-Hydro or haemopericardium. 3-Pericarditis especially in late stage. 4-Heart displacement. 5-Neoplasma	1-Pneumothorax 2-Hydrothrax 3-Pulmonary emphysema

(D) Auscultation:

1-Careful auscultation will give more valuable information concerning the heart status (functional status) than any other clinical procedures.

2-It's carried out in the same manner as for the lung by the direct or indirect method with the aid of stethoscope and the chest piece of the stethoscope should pressed firmly against the chest wake on the left side in the 3-6th intercostals space beneath and above the point of elbow joint.

(I) Normal Heart Sounds:-

*Normal heart sound by auscultation in large ruminants will be summarized the following table:-

Sound / Points	(1) Systolic sound	(2) Diastolic sound
1- Origin	-Originated from contraction of the ventricles and closure of atrioventricular valve with tension of the cardiac tendinae	-Originated from the closure of semilunar valves (aortic and pulmonary)
2- Name of sound	"LUBB" sound	"DUPP" sound
3- Characters	Dull, loud and prolonged	Short & sharp.

NB: *The heart sound are readily recognized when the heart rate is slow while they cannot be readily recognized (distinguished) from each other when the heart rate is rapid.

(II) Abnormal Heart Sounds By Auscultation

***(A) Abnormal heart rate*:** *Can be manifested in the form of bradycardia or tachycardia (mentioned before)

(B) Abnormalities in the intensity of heart sound:

1-Intensity of systolic sound is related to the force of the ventricular contraction so that the intensity of the systolic sound:

*Increased in case of: - Ventricular hypertrophy.

*Decreased in case of: - Myocardial weakness.

2-Intensity of diastolic sound related to the resistance of the major and minor circulation so : ***Increased hear sound intenisity in case of*** :

1-Pulmonary emphysema or Aortic stenosis

2-High blood pressure or Extensive bronchopneumonia

Decreased intensity in case of:- Valvular insufficiency or stenosis

(C) Duplication of heart sound:

1- Duplication of systolic sound occurred due to presence of gap between the ventricular sound and tension sound (caused by cardiac tendinae)

* Ex: High blood pressure.

2-Duplication of diastolic sound occurred due to failure of the semilunar value to close as in case of: ***Ex.*** Increase in the intrapulmonary or peripheral blood pressure.

(D)Abnormal heart sounds "Murmurs"

(I) Endocardial Murmurs"	(II) Pericardial Murmurs"
* It's arises within the heart usually as a result of valvular insufficiency or stenosis producing truble of the blood stream within the heart and it may included:- (1)Systolic murmurs: as in vagus indigestion * Systolic murmurs are associated with ventricular systoles due to imperfect closure of the atrioventricular valve (Bicuspid & tricuspid valve) * It commences with systolic sound or between systolic and diastole sound.	***(1) Frictional sound***: As pericarditis in early stage or in pleurisy ***(2) Muffled sound***: * Occurred when the pericardial sac conations sufficient amount of fluid and organized As:- ***Ex:*** Exudates, so that the heart sound become faint and muffled be heart sound as came from a far distance. ***Ex:*** Heme- or hydropericardium myocardial- weakness ***(3) Tinkling sound*** ***Ex***: valvular insufficiency or stenosis

(III) Diastolic murmurs:

1-Diastolic murmurs are associated with ventricular diastole due to imperfect closure of semilunar valves.

2-It commences with diastolic sound or between diastolic sound and the next systolic sound

Ex: Semilunar valve insufficiency

NB: Right atrioventricular valve insufficiency is the most common adventitious cardiac sounds occurring in the cattle and small ruminants, its pansystolic (i.e. commences with all systolic phase) and it's audible in the 4th inter costal spaces on the left side.

(IV) Tinkling sound:

1- Tinkling sound in the cardiac area indicate the presence of gas on the surface of fluid that enclosed in the pericardial sac.

2-Tinkling sound similar to that occurred case of traumatic pericarditis.

3-Gas production result from the presence of certain bacteria which are introduced following the entry of a foreign body in case of traumatic pericarditis.

(V)- **IN traumatic pericarditis, auscultation of the heart according to the stage of the disease as the following:-**

1-1st stage → frictional sound due to roughness and dryness of pericardial layer.

2-2nd stage → dribbling sound when sufficient fluid present in the pericardial sac.

3-3rd stage → ***splashing or tinkling*** sound due to presence of gas in pericardial sac due to anaerobic microorganisms which enter with the foreign body.

4-4th.Stage → ***Muffled*** due to organization of the exudates in the pericardial sac.

Special Methods Of Examination Of The Heart:

1- Angiocrdiography. 2- Phonocardiography.

3- Electrocardiograph E.C.G. 4- Radiography. 5- Pain test

Pain test: it is a specific test for confirmation the diagnosis of traumatic pericarditis

1-Walking on down hill:-*Upward give no signs.

*Downward the animal show the signs of pain or reluctant to walk.

2-Pinching of weather → the animal show the signs of pain.

3- Turning the animal in acute angle it shows the signs of pain.

4-Side stick method at zyphoid cartilage by raising the animal and suddenly release of the animal we found the grunting sound which can be detected by auscultation of larynx.

Digestive System In Large Ruminants

A-Manifestations Of Alimentary Tract Disorders:-

(I).Abnormal prehension:-

*Prehension in cattle by using of the tongue and then nipped off the food between the front teeth and dental pad.

Causes of absent or reduced activity of prehension :-

-Tetanus -Listeriosis

-Trauma in the jaw or mandible. -Rabies

-Stomatitis -Glossitis -Foreign body in the mouth

-Actinobacillosis -Actinomycosis

-Foot and mouth disease -Rinder pest

-Bovine viral diarrhea (BND) -Mucosal disease

-Blue tongue -Mercury poisoning

-Zinc deficiency due to ulcers on the dental pad

(II)-Abnormal mastication:-

*Problems in mastication in large ruminants are rare but some animal may drop the food from the mouth and other may retain the food in the mouth when there is problem in mastication.

*Some animals with problems in mastication may refuse chewing in some cases and passage of undigested food particles with the faecal mater due to improper digestion.

Causes of reduced or absent of mastication:-

-Teeth abnormalities -Tetanus

-Foot and mouth disease
-Trauma in the jaw
-Malignant catarrhal fever
-Stomatitis
-Glossitis
- Calf diphtheria

(II)-Pica:-

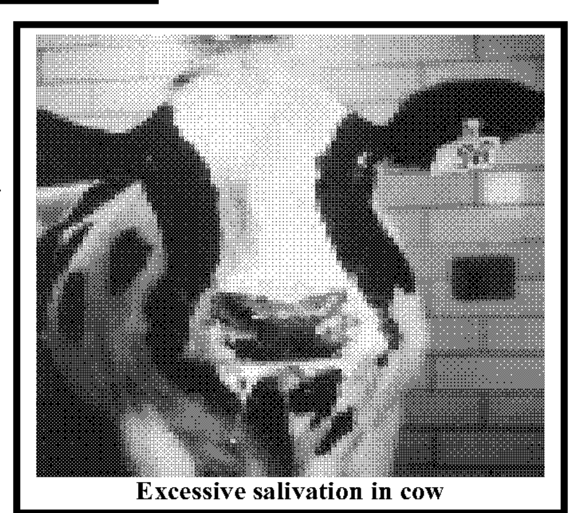
*Cases of pica in large ruminants are few and it is usually due to deficiencies and it may be manifested in the form of eating of abnormal or unusual diet of large ruminants, excessive licking or urine drinking

Causes of pica:-

-Rabies
-Actinomycosis
-Water deprivation -Salt deficiency
-Vitamin D deficiency
-Lack of roughage
-Hypophosphatemia
-Ketosis (acetonemia)
-Chronic selenosis (selenium toxicity)
-Deficiency of sodium chloride (common salt), copper or cobalt

(III)-Excessive salivation (sialosis):-

*Sialosis or excessive salivation resulted either from excessive production of saliva or problematic process of swallowing or deglutition or as a response of painful condition in the oral cavity.



Excessive salivation in cow

Causes of sialosis or excessive salivation:-

-Hypomagnesaemia -Esophageal obstruction

-Rickets -Rabies -Tetanus

-Rinder pest -Stomatitis -Lead poisoning

-Bovine viral diarrhea -Foot and mouth diseases

-Phosphorous poisoning -Tempany

-Organ phosphorous poisoning -Blue tongue

-Pharyngeal paralysis or pharyngitis -Calf diphtheria

-Esophageal obstruction, paralysis or esophegitis. –Encephalitis

(IV)-Regurgitation of food:-

*Uncommon in large ruminants as the regurgitation is considered as a normal step of rumination, but when it occurred outside the mouth or involuntary it considered as abnormal.

Causes of regurgitation:-

-Diaphragmatic hernia -Megaoesophegus -Oesophegitis

-Pharyngeal paralysis, obstruction or pharyngitis -Hypomagnesaemia.

(V)-Dysphagia:-

*Swallowing or deglutition means that transportation of masticated food from the oral cavity to the stomach through the pharynx and esophagus and any abnormalities in the swallowing process reflected on the animal in the form of dysphagia (painful and/or difficult swallowing).

Causes of dysphagia:-

-Esophageal diseases (obstruction, paralysis, inflammation, megaesophegus…………………………….etc.).

-Pharyngeal diseases (obstruction, paralysis, inflammation…….etc.)

(VI)-Abnormal shaped abdomen:-

*Abnormal shaped abdomen in large ruminants may be either by increased sized (distended) or reduction in the size of the abdomen.

Causes of distended or increased sized abdomen:-

-Abomasal displacement -Tempany -Ascitis or liver diseases.
-Impaction -Urine retention -Pyometria
-Normal after heavy meal or in the late stage of pregnancy

Causes of decreased sized abdomen:-

-Pyelonephritis -Sever diarrhea -TB. or liver abscess.
-Starvation, malnutrition or deficiencies -Chronic pneumonia

(VII)-Constipation and tensmus:-

*Constipation occurred when there is reduction in the movement of alimentary tract resulting in passage of small hard amount of faecal matter.
*Constipation may be associated with tensmus or straining or signs of pain specially when there are problems in the pelvic cavity, alimentary tracts organs or urogenital organs.

Causes of constipation:-

-Fever -Tetanus -Septicemic conditions
-Zinc poisoning -Ruminal atony -Traumatic reticulitis
-Lack of water -Indigestion -Ketosis (acetonemia)
-Abomasal impaction -Hepatitis -Hypomagnesaemia
-Abomasal displacement (right) -Ruminal impaction
-Tapeworm infestation

Causes of tensmus:-

-Cystitis -Sever diarrhea -Retained placenta
-Coccidiosis -Parturition -Cervicitis
-Urolithiasis -Abortion -Acute enteritis (salmonellosis)
-Vaginitis -Pyelonephritis

(VIII)-Colic:-

*Signs of colic in large ruminants in the form of restlessness, kicking of the abdomen, or rising and laying down frequently are similar to that of horses but in horse are clearer than that in large ruminants.

Causes of colic:-

-Peritonitis -Traumatic reticulitis
-Abomasitis -Omasal or abomasal impaction
-Ruminal tempany - Abomasal displacement
-Impaction (lactic acidosis) -Hepatitis –Cystitis
-Traumatic pericarditis -Urolithiasis.

(IX)-Diarrhea or enteritis:-

*It is one of the most common problem in large ruminants and there are many factors that affecting in the type of diarrhea according to age of the animal, physical conditions of the animal, feeding system, aim of breeding, infectious agents(virus, bacteria, protozoa…………….etc.) as well as physical causes of diarrhea .

Causes of diarrhea in young calf:-

-Coccidiosis -Colibacillosis -Salmonellosis
-Sodium chloride poisoning

-Cooper and vitamin A deficiency

-Lead, mercury and nitrate poisoning -Dietary scour due to bad feeding management

-Rotavirus, Adenovirus or Enterovirus infection (in the first week or in the first few days of the life).

Causes of diarrhea in adult and growing cattle:-

-Some case of lactic acidosis (ruminal impaction) -Fascilaoiasis

-Salmonellosis -Antibiotic induced diarrhea. -Aflatoxicosis

-Congestive heart failure -Hypomagnesaemia (rare)

-Organ phosphorous poisoning -Bovine viral diarrhea (BVD)

-Parasitic gastroenteritis -Sodium chloride and copper poisoning

(X)-Ruminal atony and lack of rumination:-

* It is a condition which characterized by lack of ruminal movement and lack of rumination together with decrease of food intake and decreases the amount of faecal matter output

Causes of ruminal atony and lack of rumination:-

-Acidosis or alkalosis -Vagal indigestion

-Abdominal pain -Sudden change in the diet

-Over feeding of cereals -Lack of water

-Ruminal tempany and impaction -Traumatic reticulitis

-Some allergic conditions

-Anesthesia or using of central nervous system depressants.

-Dehydration, hypocalcaemia and pneumonia

-Febrile conditions -Recumbency (downer cow syndrome)

-Prolonged oral use of sulphonamid and antibiotics.

-Use of prostaglandins in some gynecological conditions.

(B)-Examination Of Oral Cavity, Pharynx and Esophagus

*Examination of the oral cavity, pharynx and esophagus should be done completely by the normal physical methods(palpation, percussion ……) to detect the normal and abnormal characters of each organs and to detect the main cause of the mentioned manifestations as salivation, dysphagia, abnormal prehension and mastication …………………..etc.



Examiantion of mouth in large ruminants

C- Examination Of The Abdomen (stomach)

*Inspection of the abdomen to detect the abnormal distension or decreased sized abdomen and to detect another manifestations of alimentary tract

disorders that related to the abdomen as colic, lack of rumination, diarrhea, constipation………………..etc.

*Physical Examination Of The Stomach:-

(I)-Rumen:

1-It's the first and the largest part of the stomach represente about 80% of the total area of the stomach and it is presented on the left side of abdomen and it can be examined (inspection,palpation ,percussion or auscultation) at the left sublumber fossa.

3-Its capacity about 135 – 225 liters.

2-There is depression at the external surface of the rumen which corrosponding to projection from inner surface. Called ruminal pillar which divides the rumen into 2 saces (dorsal and venteral ruminal saces).

*3- **Palpation of the rumen:*** *Normally → "***Resilent***" palpation.and abnormally as in case of :-

***Doughy** palpation as in case of → Impaction.

***Emphysematous** palpation as in case of → Tempany.

***Painfull** palpation as in case of → Peritonitis. -Traumatic reticulitis

4-Auscultation of the rumen*:** Normally "Gurgling or Booming***" sound in the normal rate of 2-5 / 2minutes, the sound occurred due to the movement of the fluid and food particles in the rumen which imposed by gase bubles.

5-Abnormal auscultation of the rumen :

Increased ruminal sound as in case of :- -Eearly stage of diarrhoea.
-Early stage of tempany -Vagal indigestion -Esophegeal obestruction

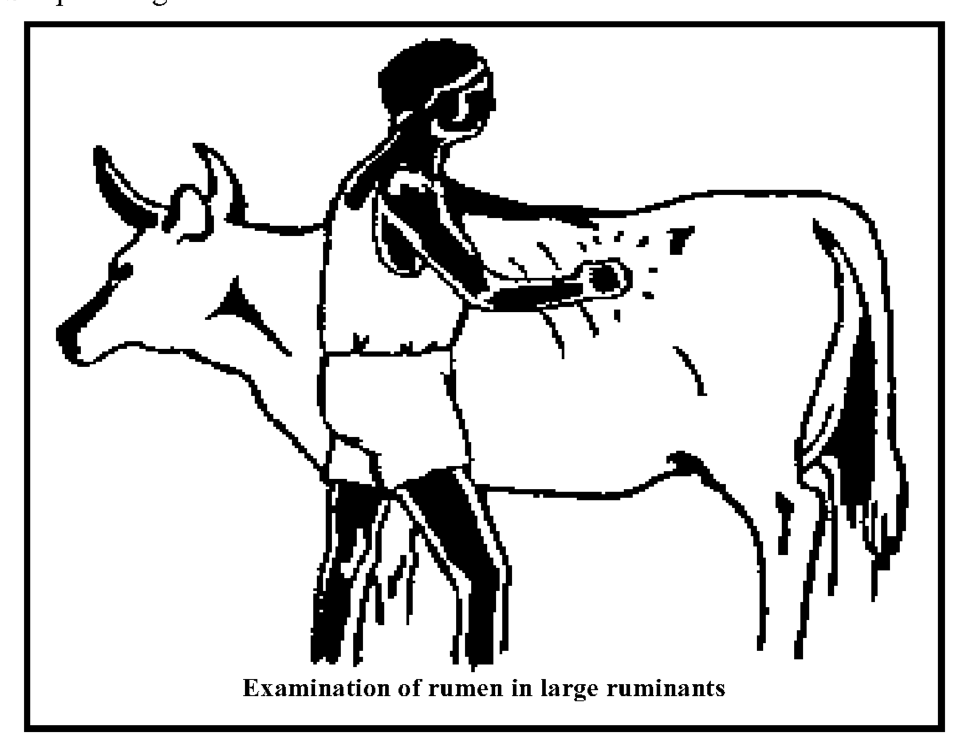
Decreased ruminal sound as in case of :-

-Ketosis(acetonemia) -Bovine viral diarrhoea -Toxemia

-Febrile condition -Vagal indigestion -Mild impaction

-Abomasal displacement. -Localized peritoniti

- Simple indigestion -Traumatic reticulitis



Examination of rumen in large ruminants

Absent of ruminal sound as n case of .-

-Acute impaction. -Sever tempany -Abomasal impaction

-Diaphragmatic hernia -Late stage of vagal indigestion -Ruminitis.

-Sugar beet, arsenic or organophosphorous poisoning.

6-Percussion of the rumen Normal percussion resembling to **"Resonant sound"** while abnormal percussion may be :

****Dull*** percussion as in case of → Impaction.

Tympanic percussion as in case of→ Tempany.

(II)-Reticulum:

1-It follows the rumen and it is the smallest part of the stomach, represent about 5% of the total size of the stomach, it is the most cranially situated comportment of the stomach apposite to 6-8th intercostalspaces on the left side of the abdomen.

2-Normal auscultation of the reticulum is **"Swiching sound".**

3-The sound present for few seconds and disappeared and reappeared again accorrding to the ruminal movementes and the sound disappeared in case of:- -Febrail condition -Sever impacation. -Traumatic reticulitis.

(III)-Omasum:

1-It follows the reticulum and represent 8% of the total size of the stomach, lies on the right side of the medium plain of the body and rest on the abomasum.

2-It's left surface is related to the reticulum, rumen and abomasum while it's right surface is related to the liver, diaphragm and small area of the abdominal wall opposite to 7-9th rib on the right side.

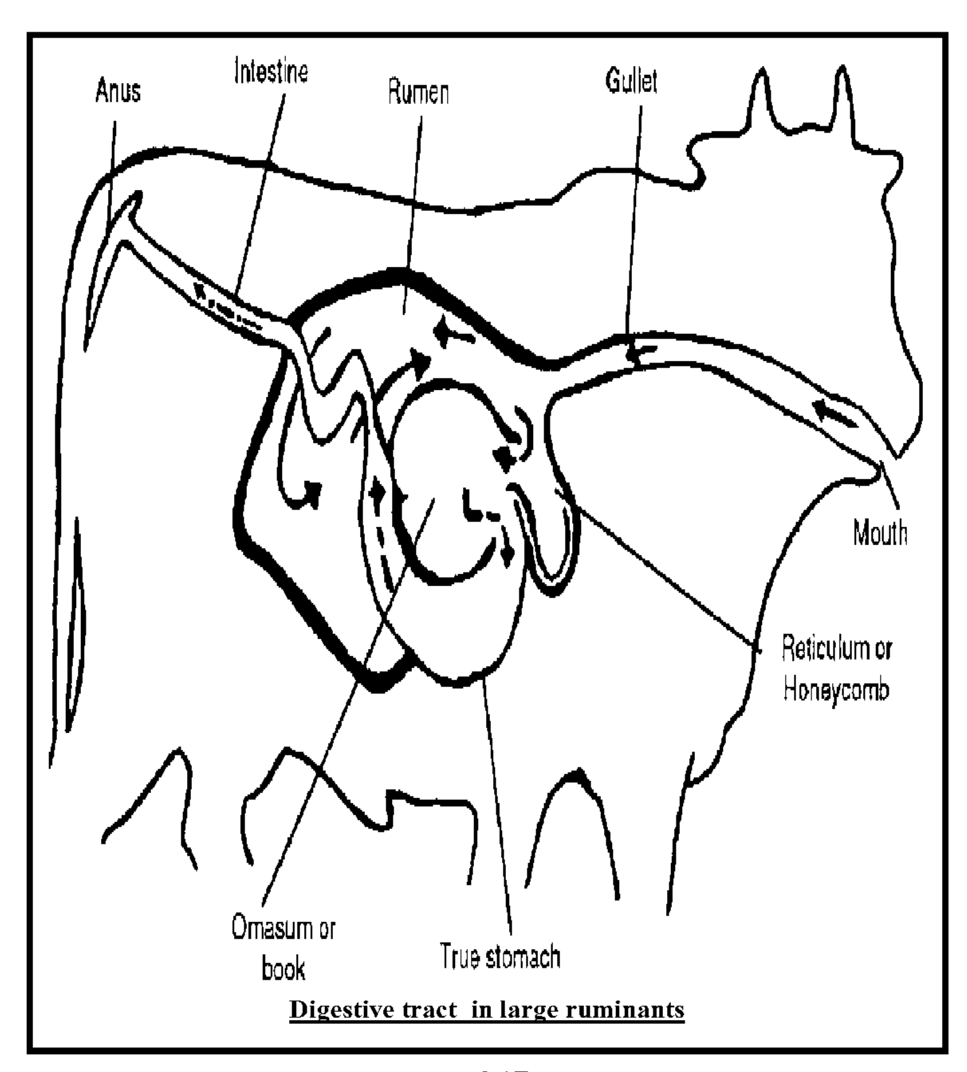
3-It cannot be examined clinically because it's rested on the abomasum, so examine the other three compartments of the stomach which can gives of point of view about the healthy states of the omasum.

(IV)-Abomasum: 'True stomach' or "glandular stomach "

1-It's ressembling the monogestric stomach in mono-gastric animal. compressing about 7% of the total size of the stomach.and it's ***'U'*** shaped

structure laying on the abdominal floor on the right side opposite to 7-9th ribs or intercostal spaces.

2-In newborn calf the abomasum is about twice as large as the reticulum and rumen combined, but by the 10 – 12 weeks of the age this ratio will have been reversed.



Digestive tract in large ruminants

2-The sound called "***tinkling or high pitched metalic sound***"once per 15 minutes and can be stimulated by tactail percussion over the abdomen.

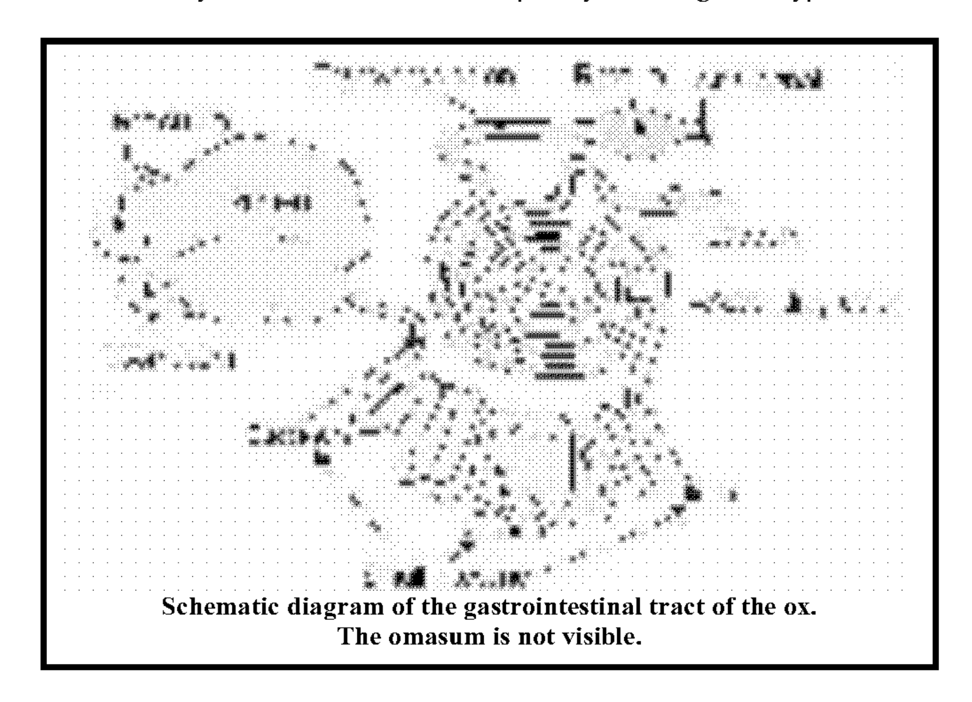
3-Absence of the abomasal movement as in case of:-

-Abomasal displacement (right or left) -Impaction- -Abomasal ulcers.

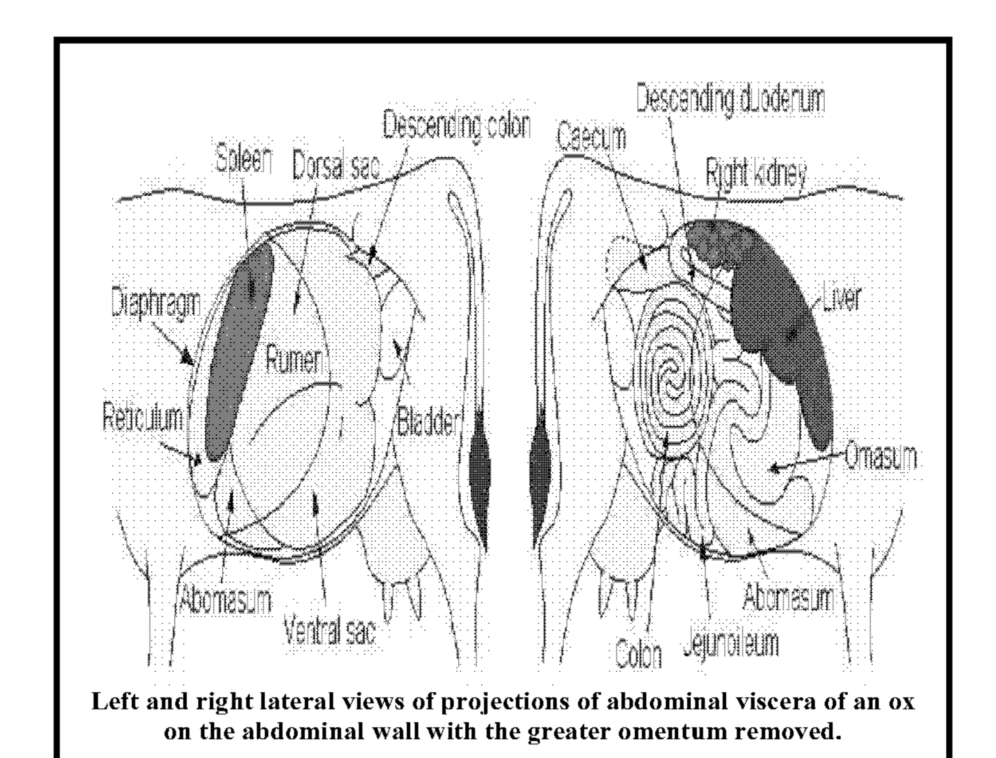
N.B. *Examination of the intestine not available clinically because it occupyes small area of the abdominal cavity due to large capacity of the stomach. But we can take point of view about the intestinal healthy status by inspection as → Diarrhoea or Constipation.

NB. *Animal can ruminat about 15-20 times per day each time varies between 2- 45 minutes and it is usually occurred in laying position as well as the young calf begines to ruminate after 6-8 months of age.

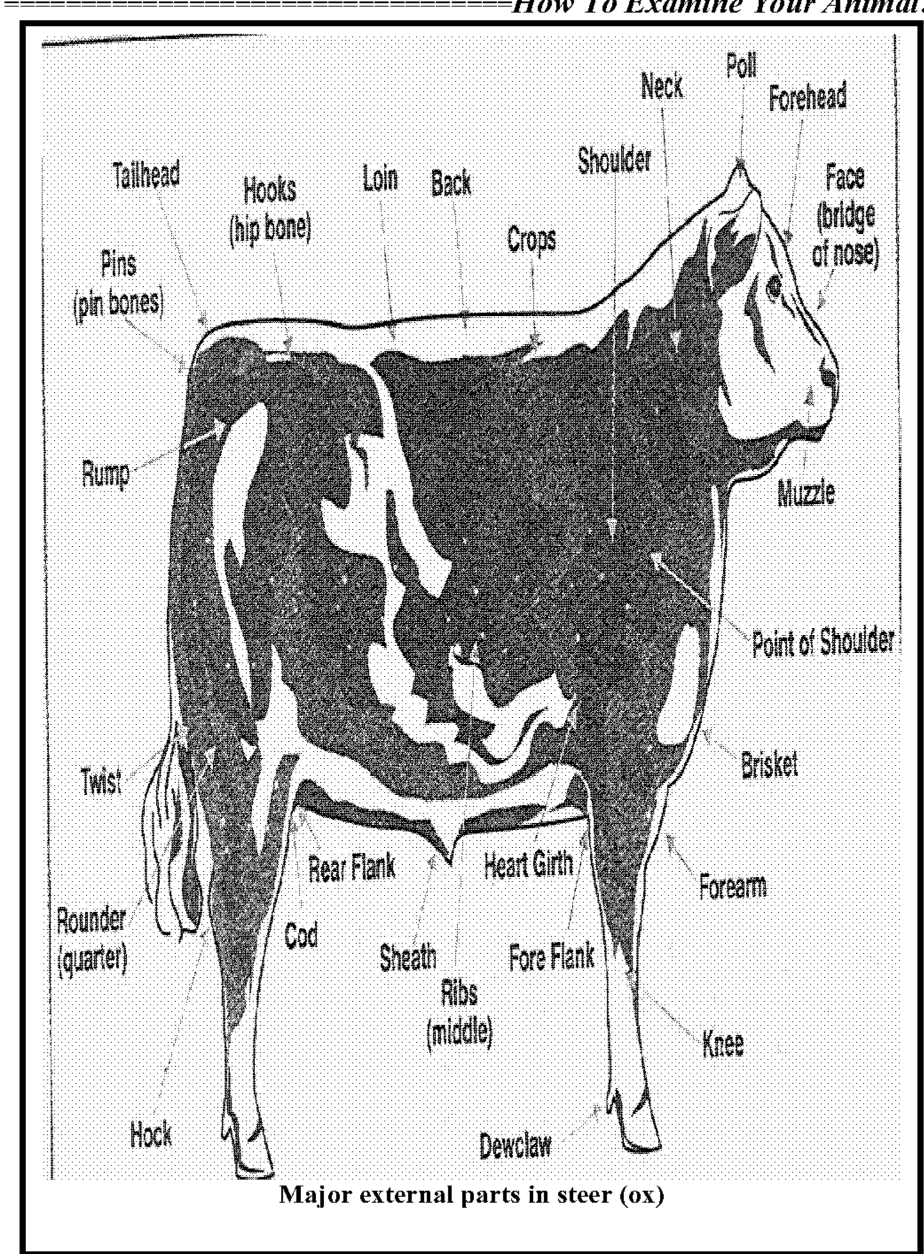
*Animal usually defecate about 12-18 times per day according to the types of food



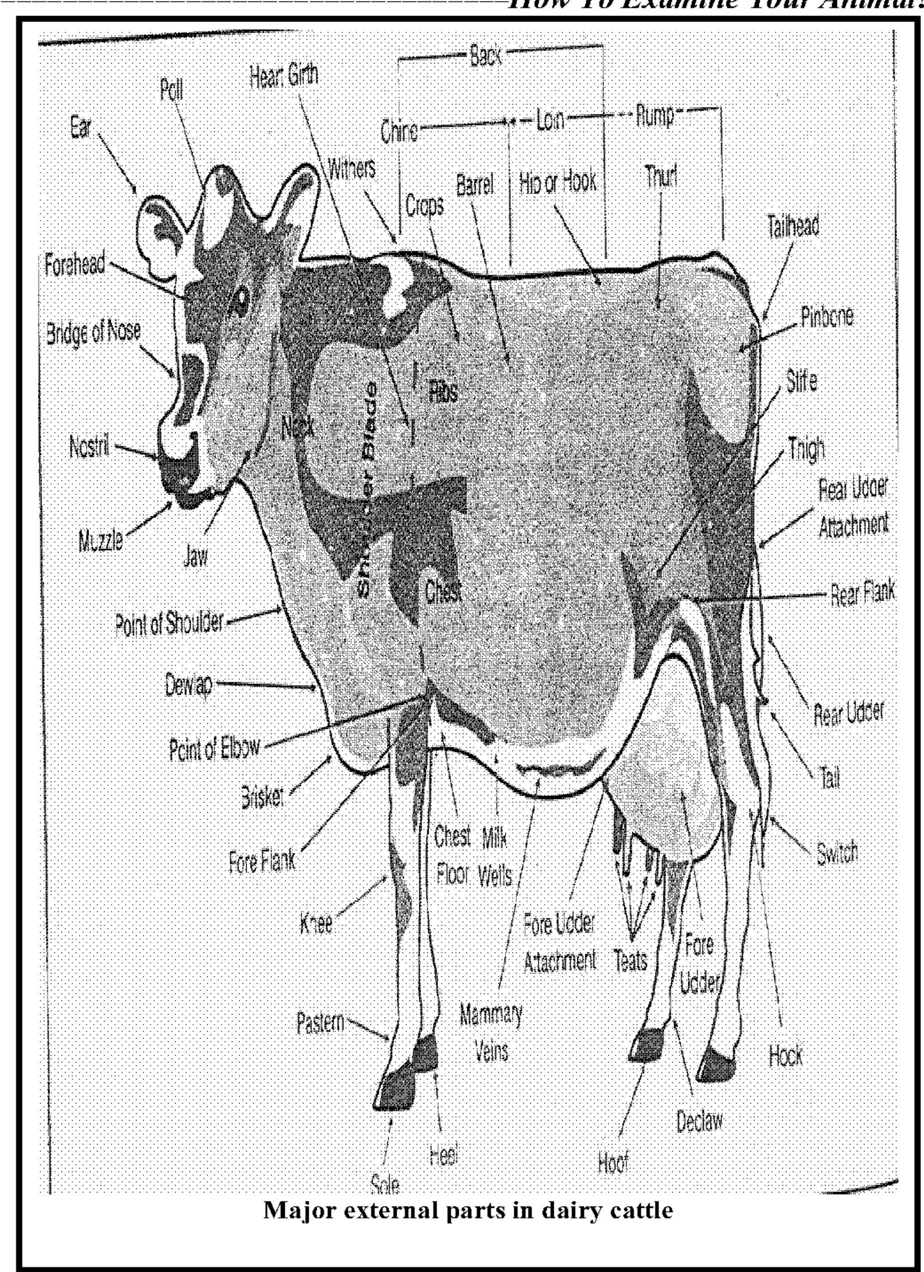
Schematic diagram of the gastrointestinal tract of the ox.
The omasum is not visible.



Left and right lateral views of projections of abdominal viscera of an ox on the abdominal wall with the greater omentum removed.



Major external parts in steer (ox)



Major external parts in dairy cattle

Chapter No. (5)

How To Examine



Your Small Ruminants?

Inspection Of Sheep And Goat

Inspection means that observation of the animal prior to handling of the animal and inspection mainly includes:

1-Behaviour and appearance. 2-Vices (bad habites).
3-Physical condition. 4-Demeanour
5-Posture of the animal 6-Gait.
7-Skin 8-Eating, defication & urination.
9-Tremors and convulsion. 10-Other signs.

I- Behaviour And Appearance :

- Separation of the animal from the herd or animal groups is indictation to illness and the abnormal behaviour is reflected from focus of pain e.g., abdominal pain which is indicated by:

**Grunting or groaning. *Grinding on the teeth. *Looking to the flank.*

-Care should be taken during examination to differentiate between the manifestations that arising from the GIT (true coic) and that associated with other diseases as pleuritis or urogenital affections (falls colic).

2-Vices (bad habite):

-Vigrous likcing of the skin or scratching as in mange or urticaria

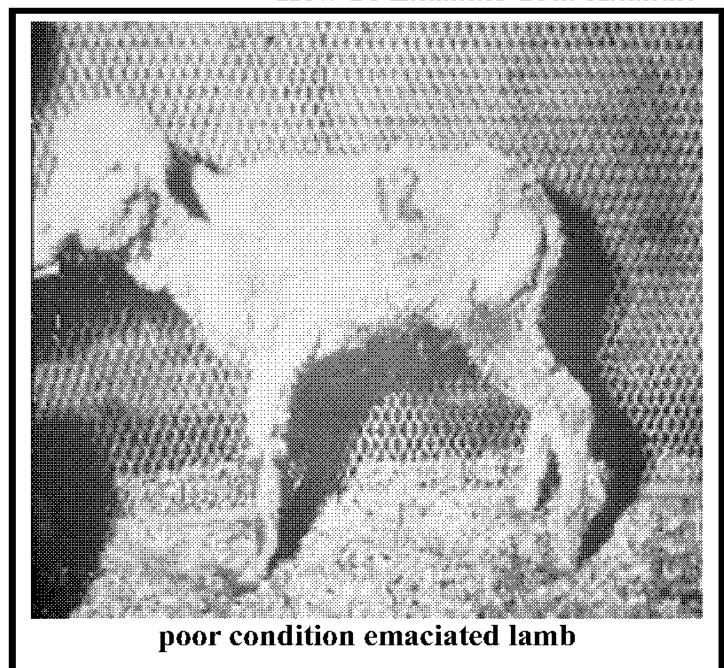
-Certain vices may be heridaetary basis.

3-Physical Condition:-

A-Poor condition: Lean (poor conditioned or Emaciated animal).

-In which the boney prominantes of the animal not covered with flesh (muscles) and it is clear specailly in the pelvice area or in the supraorbital fossa or ribes as in case of :-

*Acetonaemia.
*Cobalt dificiency.
*Fascioliasis.
*Lice infestations
*Copper dificiency.
*Chronic hypomagnesaemia.
*Acute gastroeneteritis in sheep& goat.
*Coccidiosis



poor condition emaciated lamb

N.B.: Animal may be lean but with good appetite as in exocrine type of pancreatic difficiency or endocrine deficiency or chronic nephritis or internal parasites.

B- Normal (well conditioned):-

-These occures when all boney prominants parts of the animal are covered by the flesh that gives round appearance of the animal.

C- Fatty or obesity animal (Excessive deposition of fat):-

-If these condition sufficiently to cause systemic disturbances as dyspend or difficulte in walking it called 'obesity'.

-Site of fat depsoition: base of the tail in sheep (fat tailed)

4- Demeanour:

Demeanour means response of the animal to external stimuli and it may be: ***A- Decreased demeanour:***in the form of **-** Dull -Dummy -Coma.

B-Increased deamenor in the form of - Restlessness -Mania -Apprehensive -Frenze

C- Normal deamenor or Bright animal

<u>A- Decreased Demenaour :</u>

(I)-Bright: It's the normal response to external stimuti to movement or noise and these response manifested in the form of : Rasing of the head, erection of the ears, running away and turning toward the source of stimulus.

(II)-Dullness or pathy:

-In which the reaction to normal stimuli is retarded, or sluggish or some what depressed.

-Dullness or pathy is not, charactristic to particular disease but is afeature of febrile or toxaemic conditional – Heat stroke.

(III)-Dummy:

-Advanced hepatic degree of failure to response to external stimuli but the animal remain stand, incoordinated movement but there is response of painful stimuli

-Dummy occures in:-

*Advanced hepatic fibrosis. *Ketosis. *Listeriosis.

*Encephalomytitis *Some cases of the lead poisoning.

N.B. Advanced degree of pathy is considered as Coma in which the animal is an unconcious and fall to response to the painful stimuli as in case of

*Advanced stages of paturient paresis (hypocalcaemia)

*Hypothermia. *Meningitis (late stage).

B- Increased demeanour:

-Increase the responsiveness to external stimuli vary in degree from mild to frenzied.

(I)-Mildy anxious (apprehensive): The animal appeared allerte, look about constantly, but exhibite normal movements and these condition occurred in the early stage of parturient presis or serious defecte in the visions.

(II)-Restlessness: In these condition the movements of the animal are constante and consisting of : lying down, rooling, getting up again, Kicking at belly groaning or belowing these condition indication to intermittened or constant pain as in

*Colic *Gastritis enteritis

*Early stage of the contagius pyelonephritis.

(III)-Mania: appeared in the the form of more extreme abnormal behaivour as vigrous likcing of parts of the body as in ketosis.
Or pressing forwarde with the head as meningitis or early stage of rabies.

(IV)-Frenzied animal: in which the response of the animal is uncontrolled as in cas of *Rabies

* Acute lead poisoning

*Ketosis (prgnancy toxemia)

*Hypomgnesemia (hypereathesia which means hypersensitivity of external stimuli as movement, touch or voice).

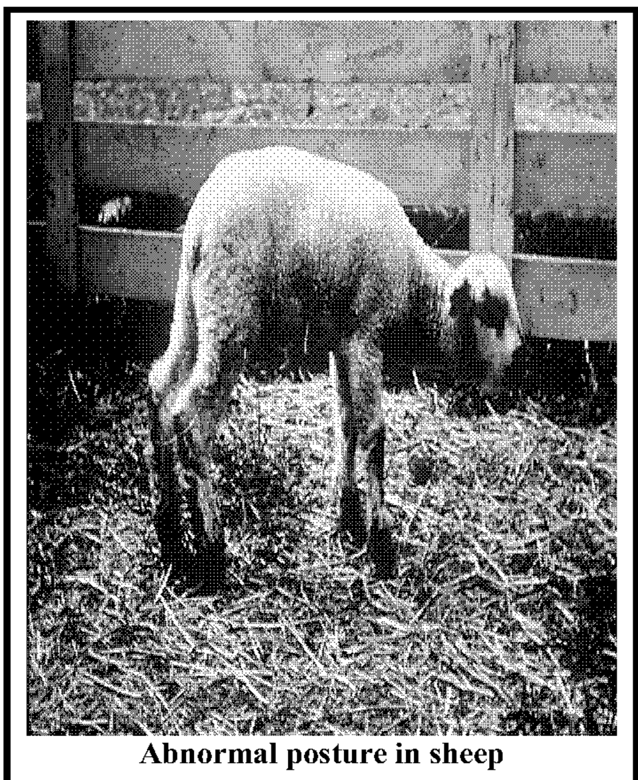
5- Posture Of The Animal:

-There are many abnormal posture of sheep and goat which may indicate or help in diagnosis of some diseases as in case of:-

-In ability to stande on the fore limbes with swelling of the carple joints in lambs as in case of arthritis

- Curvature of longe bone with abnromal posture of the fore limbes in lamb as in case of rickets.

-Arched back and abduction of hind legs as in case of urolithiasis or urine retention in rams.



Abnormal posture in sheep

6-Gait And Movemnet:-The movements of the limbs can be expressed in terms of (rate- range force and direction of the movement) and the abnormalities can be occurred in one or moe categores of these terms.

Diseases	Form of abnormal gait
1-Louping-ill in sheep (Encephalomylitis due to flavivirus)	- Range and force of movements are affectred .
2- Arthritis	-Stumbling walk due to paniful condition of the joints.

3- Laminitis.	-Stumbling walk due to paniful condition of the feet.
4-Listeriosis or Pregnancy Toxaemia.	-Walking in circle manner with rotation of head, and this is condition may be perminante and appeared spasmodically as in cases of pregnancy toxemia
5-Nukling on the joints	-Selenium or copper deficiecny specailly in newly born or young grwoing animals

7- Skin:-

*Inspection of the skine is very important to detect some types of affection as in cas of parakeratosis, alopecia,external parasites or photosensitization ……..etc.

8- Abnormal Eating, Defecation And Urination.

-Abnormality that detected in eating as

*Salivation.or abnormal prehension, mastication and swallowing As in case of F.M.D. or any oral or esophegeal affections.

Abnormal defecation: In the form of Tensmus, constipition, or diarrhoea

Abnormal urination In the form of Straining as in case of urolithiasis.

- This signs will be disscussed with each systemn during special systematic examination of GIT and urinary system.

9-Tremors And Convulsions:-

	Tremors	Convulsion
Definition:	-Its persisting and repetitive twitching of skeletal muscles and it may be slight (fine) or strong (coars) tremors.	-It is forced violent muscular contraction wich may be continued for long period or interspersed by intervale of relaxation.
Types	***Localized*** take local area (group) of muscles causing only movement of skin as in case of overload on certain group of muscle as in case of transportation of animlas for longe distance. ***Generalized*** : it takes masses of muscles in which it leads to movement of eye, head or part of the trunk as early stage of fever or hypothemia.	***Clonic:-*** In with there is repeated muscular spasme with paddling movement of limbs, and inter-spersed with period of relaxation as in hypomagnesemia ***Tetanic:-***These type of convulsion occur more frequently than clonic or tonic convulsion in wich there is continuous muscular contraction as in strychnine poisoning or tetanus.

NB.Convulsion may be varies according to its orgine as it may be

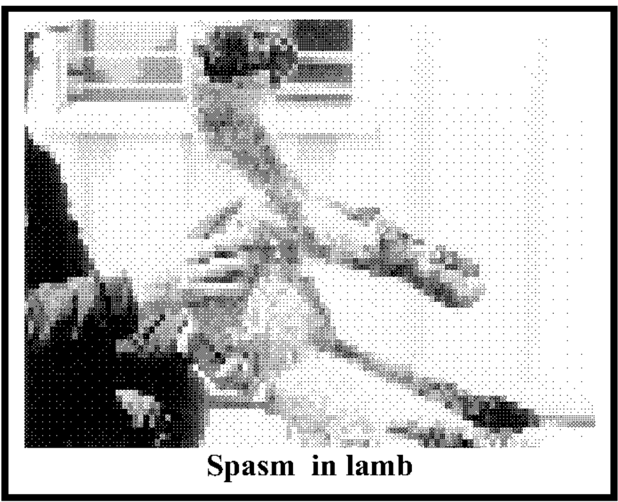
A- Central convulsion In which the main causes of the muscular contracion exhibted due to affections in the brain as in case of :-

-Encephalomylitis. Encephalitis .

-Interacranial haemorrhage, tumour or abscess

-Acute cerebral adema associated with sodium posioning

-Polioencephalomilicia or Water intoxication

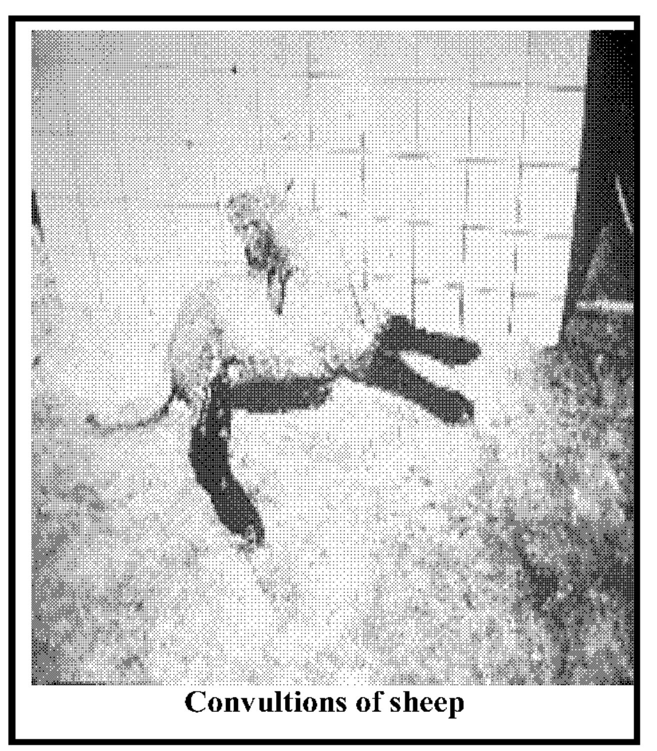

Spasm in lamb

B-Peripheral convulison: In witch the muscular action exhibitied in convulsion orignnated outside the brain as in case of :

-Hypoxic convulsion. → as in pneumania, acute heart failure, haemolytic anemia nitrite and cyanide histotoxic posioning.

-Hypoglycemic convulsion. → as in case of pregnancy toxemia.

-Intoxication typically associated with convulsion inlcuding poisoming by lead.organic arsenic compound, organic mercury or phosphate, insecticide mycotoxins, strychnine, nicotine, plant poisoning as well as toxin of clostridium perfringens type D and clostridum tetani).


Convultions of sheep

10- Other Signs By Inspection:

- Detection of the symmetrical conformation of the abdomen (tympany).

-Observation of the respiratory movements, rhythem, type and abnormal respiratory sound as coughing, sneezing- snorting, → all these points well be taken in details with special examination of each systems.

General Signs Of Healthy Sheep And Goat :-

1-General alertness 2-Free movement 3-Freedom from lamness

4-Close and uniform fleece or hair 5-Active feeding 6-Rumination

7-No visable wounds, abscesses or injuries.

8-Body condition scores from 3 – 4.

General Signe Of Unhealthy Sheep And Goat:-

1-Abnormal posture and behaviour

2-Listlessness

3-Stiffness in movement

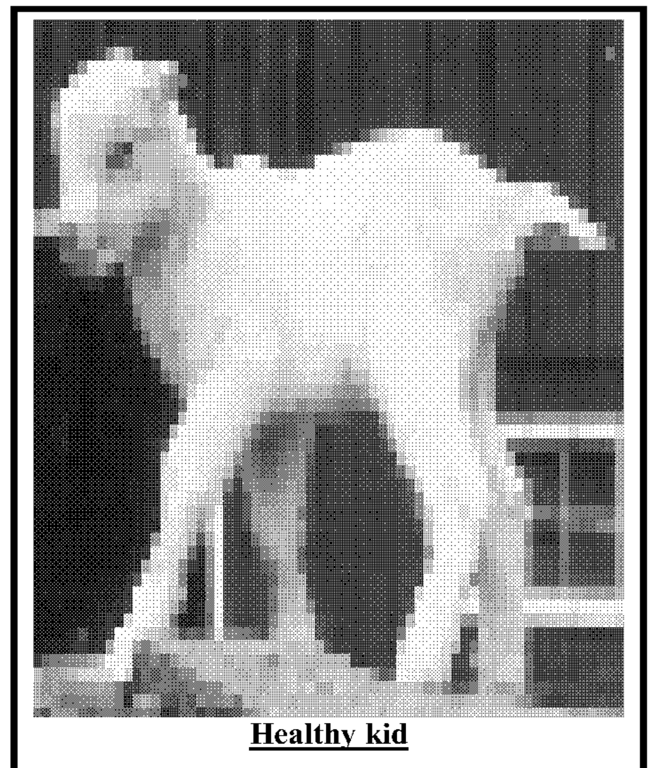
4-Persistance cough or panting

5-Absence of cudding.

6-Loss of condition

7-Persistent of unthriftness

8-Lamness 9-Diarrhoea



Healthy kid

10-Patchy fleece or hair or wool loss 11-Constant rubbing

12-Separation from the group. 13–Abnormal discharges

14-Abnoraml swelling on the body surface.

Some Different Characters Between Sheep And Goat

*People who are not familiar with livestock often confuse sheep and goats.

What are some of the differences?

1-Sheep have fleece, goats have hair. (Exception: Barbados sheep.)

2-Sheep say "***baa*** "goats say "***maa*".** Seriously, their voices are different.

3-Most goats are naturally horned, but many sheep breeds are polled (naturally hornless).

4-Sheep are stupid, goats are smart. We like sheep, but would never bet money on a lamb trying to find its way out of a maze. As far as survival skills go, though, sheep must be as smart as many other species. They have survived in the wild for hundreds of years all over the world.

5-Sheep need less copper than goats. Some mineral supplements that are great for goats can be toxic to sheep.

6-Sheep are more likely to overeat than goats. Be careful about turning sheep into a lush pasture or free feeding them more hay than they usually eat.

7-Sheep should be vaccinated for enterotoxaemia or "overeating" disease.

8-Sheep are grazers, goats are browsers. That means sheep are probably better weed eaters, since they eat grasses and other plants all the way down to the ground.

9-Goats, on the other hand, nibble here and there, sampling a variety of bushes and leaves.

10-Sheep milk is higher in fat than goat milk. Either one can be used to make feta cheese.

11-Some of these comments are based on our personal experience. Our observations may be different than yours if you live in a different climate or use pasture year round for your livestock:

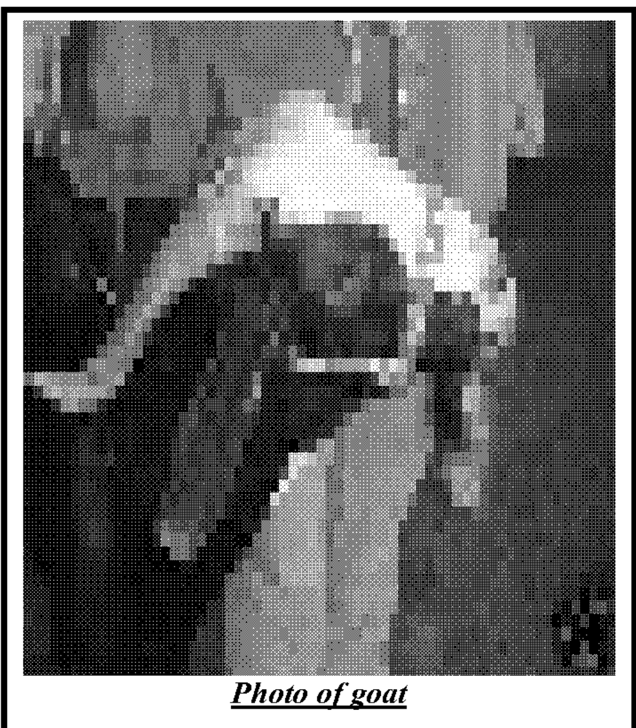


Photo of goat

12-Sheep are more likely to have worms; their favorite is the stomach worm strongyles. Goats are more likely to have coccidia (an intestinal protozoan parasite).

13-Sheep are less susceptible to external parasites, including fungi such as ringworm. Goats, especially those with longer hair, often have lice. Ringworm is common.

14-Sheep need hoof trimming much less often (maybe twice per year) than goats (once or twice monthly).

Some Feeding Practice Of Ruminants:-

1. Commercial rations for farm animals are normally used. However, it is important to avoid high-energy rations used for production of meat or milk.

2. Sheep must not be fed cattle food. Sheep have a lower requirement for copper than do cattle, and are susceptible to copper toxicity if fed the higher-copper cattle diets.

3. Ruminants, like goats, sheep and calves require some roughage in their diet to ensure proper rumination. Hay is the best source of roughage, although other sources can be used if hay presents a problem with floor drains.

4. Provide feed once daily. Do not pour feed into wet feeders. Look at the cage card to determine body weight of the animal you are feeding. If not indicated consult with your supervisor or the veterinary staff.

Lambs: Unless otherwise instructed by your supervisor, the investigator's staff will hand feed the bottle, with milk replacer, to new born lambs. Mix the milk replacer according to the instructions on the package, e.g., "one part dry concentrates to two parts water; mix well".

Amounts to Feed Lambs		
Age	**Frequency**	**Total Daily Volume**
1-10 days	3-4x /day	32 ounces
11-18 days	3x/day or self-feeding	36-40 ounces
19-42 days	2x/day or self-feeding	30 ounces

5. It is important to provide enough feeder space for all animals, and to monitor to be sure certain animals are not being excluded from the feeders. Extra feeders may be needed for group housed animals.

6. Ruminants require large amounts of water for proper rumination. Large water containers should be available at all times. They should be re-filled daily, or more often if contaminated with feed or faeces. If automatic waterers are present, check the valves to be certain it functions. If waterers are outside, check them daily to be sure they are not frozen during the winter months and that they have ample water in them during the summer months.

7. Water and feed containers are sanitized weekly.

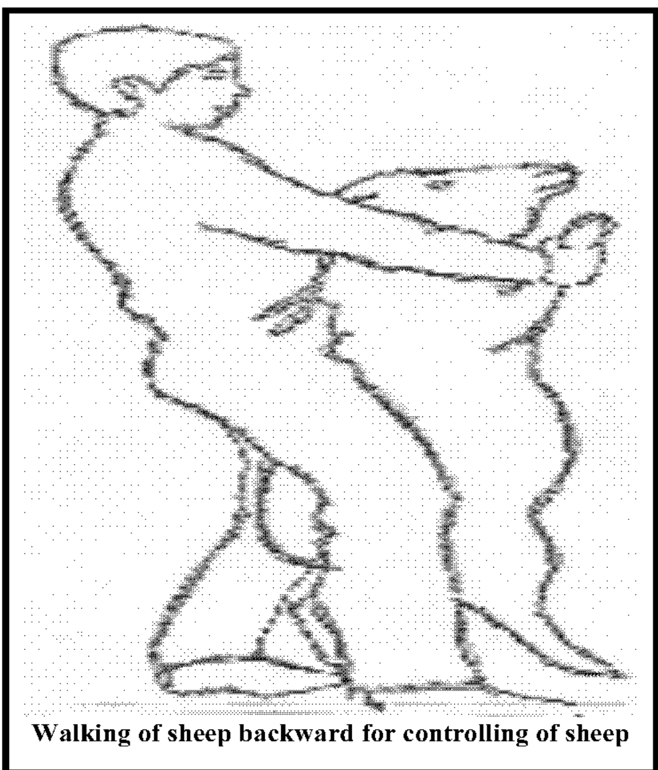
References

Restraining and handling of sheep and goat

* It is important to know how to deal with sheep and goat to avoid common accident involving sheep is being butted by a ram.

*Ewes will also protect their young and should be handled carefully.

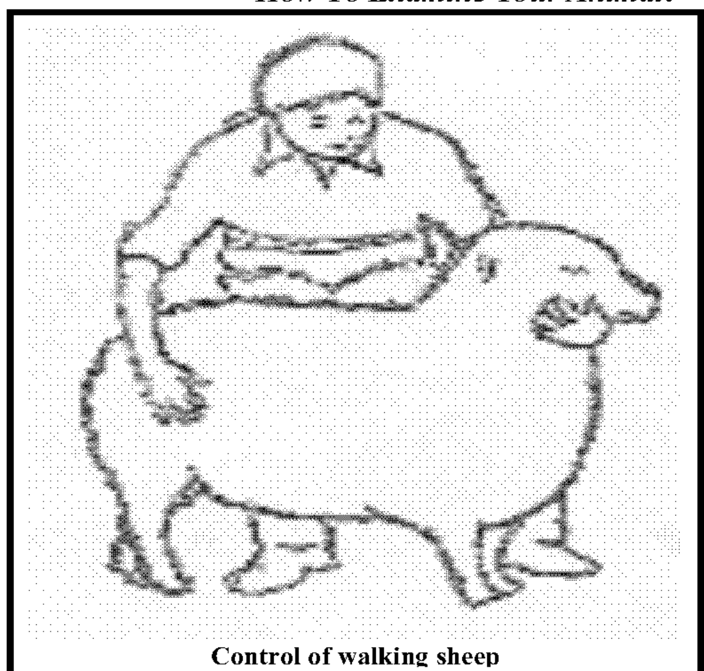
*A sheep can be immobilized for safe handling by sitting it



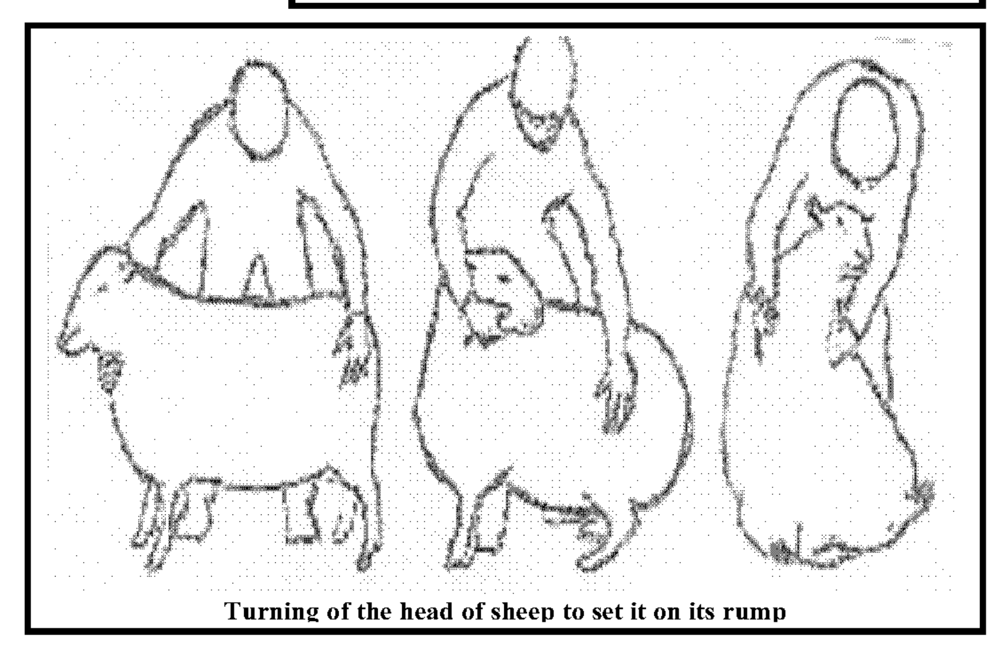
Walking of sheep backward for controlling of sheep

up on its rump on the ground.

*The most common methods of handling or restraining of sheep are shown in the following figures.(Walking of sheep backward, turning the head of sheep to set it on its rump……….etc)



Control of walking sheep



Turning of the head of sheep to set it on its rump

Body Temperature In Sheep And Goat

1-Body temperature of sheep and goat can be taken also by using of thermometer from the rectum.

2-The normal range of body temperature is ***39 - 39.5*** C°.

3-Body temperature may reach 40 C°. In hot weather or in feedlot animals.

4-One of the most important diseases that related to the body temperature is hypothermia especially in the newly born animals and we will discuss it in the following part.

Hypothermia In New Born Lamb

Introduction:-

1-Many newborn lambs die, not from disease, but from hypothermia (chilling).

2-To maintain its body temperature, the newborn lamb must produce as much heat as it is losing to the environment. If the lamb cannot do this, its body temperature will start to fall, and, lead to death.

3-The rate of heat loss is influenced by several external factors:

A-Body surface area : body weight ratio. A small lamb has a larger surface area in proportion to its weight Therefore; it will chill faster than a larger lamb. This risk is greater for lambs born as triplets or more.

B-Insulation from the coat. Some lambs are born with a thicker coat than others, once the lamb is dry, the heavier coat will give more insulation, and thus the lamb will lose less heat.

C-How quickly after birth the ewe licks the lamb dry. Maternal behavior of drying the lambs after birth is very important to avoid the risk of hypothermia.
D-Drafts. Lambs born in a drafty pen or outside with no shelter from the wind will have an accelerated heat loss.
E-Environmental temperature. A lamb loses body heat faster, the lower the surrounding temperature.
4-The heat production mechanism uses the fat reserves, mainly brown fat, laid down during pregnancy and oxygen to produce energy and heat. The starter for these processes is a component of the colostrums. The lamb must nurse the ewe within a few minutes of birth.
5-The producer can influence many of these factors by:
*Selecting a breed or cross which is suited to the operation, e.g., inside lambing against May lambing at grass
*Winter lambing in a draft free but well-ventilated building
*Being there during lambing to watch the ewes and ensure that all lambs are dried and start to nurse as soon after birth as possible.
6-This may mean using some form of estrus synchronization at the breeding season to concentrate lambing into a short time period and to reduce the labour requirements.
7-Lamb birth weight is influenced by placental size early in pregnancy. By ensuring correct nutrition in the early stages of pregnancy, good placental development can be assured.

Recognizing Hypothermia

1-The only accurate way to recognize hypothermia is by taking the lambs rectal temperature

2-Use a thermometer that measures subnormal body temperatures (many clinical thermometers do not go low enough).

3-Many of the electronic thermometers do and are more robust for the barn than the traditional mercury/glass versions.

4-The lower the rectal temperature, the more severe the hypothermia.

5-The rectal temperature of a dull weak lamb, that seems unable or unwilling to suckle, should be checked immediately.

6-The sooner remedial action can be taken, the better are the lamb's chances of survival.

7-The normal rectal temperature for a new born lamb is between 39 C°. and 40 C°.

Treatment:-

1-The basis of treatment of the hypothermic lamb is to warm it up and provide a source of energy to start heat production again.

2-Treatment varies with the degree of hypothermia as indicated by the rectal temperature

A- Treatment Of Mild Hypothermia

1-The lamb's rectal temperature is between 37 C°. and 39 C°.

2-The lamb is weak but may be able to stand.

3-It should be moved into shelter, dried off if wet, and fed colostrum by stomach tube.

<u>The appearance and behavior of hypothermic newborn lambs are showed in the following table:-</u>

Age (hours)	Cause	Appearance and Behaviour				
		35°C	**30°C**	**25°C**	**20°C**	**<20°C**
0 - 5	Long delivery Immature lamb	Weak but can stand	Recumbent	Coma	Deep coma	Death
12+	Low heat production	Recumbent	Coma and death			

4-Using a stomach tube is comparatively simple.

5-The tube is passed into the side of the mouth in the space between the front and side teeth

6-Using gentle pressure, the tube is slid into the esophagus and down to the stomach

7-The tube will move easily, any resistance or coughing indicates that the tube has entered the windpipe. It should be removed immediately.

8-The accidental passing of colostrums into the lungs will result in the death of the lamb with aspiration pneumonia.

9-Small lambs, fewer than 1.5 kg (3 lbs) at birth, may not have sufficient fat reserves to initiate heat production, even with colostrums. These can be fed an equivalent amount of 20% dextrose solution by stomach tube as an energy source.

10-The lamb can stay with the ewe provided she is in a sheltered area.

11-The lamb should be watched to ensure that it is suckling.

12-Once the rectal temperature has returned to normal, it and the ewe can be returned to the flock.

B-Treatment Of Severe Hypothermia

*Once the rectal temperature falls below 37 C°. more radical treatment is required. There are two parts to this treatment:

(I)-Reverse the hypoglycemia (II)-Warm the lamb.

*The lamb should not be given colostrums until the rectal temperature must be above 37 C°.

(II)-Reversing The Hypoglycaemia

1-The blood glucose of this lamb will be low in case of sever hypothermia.

2-A 20% dextrose solution at a dose rate of ***10 mL/kg body weight*** is injected into the abdominal cavity (intra peritoneally).

3-The site for the intraperitoneal injection is about 2 cm below the navel and 2 cm lateral to the midline.

4- Use a large (60 cc) syringe and a 20 or smaller gauge 1 inch needle, inserted at 90° to the body wall.

5-This is the injection site. Ask your veterinarian to show you how to do it.

6-The internal organs will be pushed away by the needle and not damaged.

7-Both the conscious and comatose lamb can be injected in this manner.

8-Only the lamb able to swallow should be fed by stomach tube.

9-How to make up 20% dextrose solution?

*Calculate total amount needed and multiply this by 0.4 to determine how much 50% solution to use. ***Example***: 5 kg x 10 mL/kg = 50 mL of 20% solution needed. 50 mL x 0.4 = 20 mL of 50% solution.

*Draw this amount into syringe. Then draw up the difference as boiling water. This solution will be close to body temperature.

(II)-Warming of the affected animal:-

1-The lamb also needs to be slowly warmed to restore body temperature.

2-The best method is to use a ***"warming box"*** where the lamb is placed in a container heated by warm (37°C-40°C) moving air

3-Always use a warm air heater rather than the more severe heat lamp at this stage.

4-The rectal temperature should be checked every 30 minutes to avoid overheating above the normal rectal temperature (hyperthermia).

5-Once the lamb's rectal temperature has reached 37°C, it should be removed from the warmer, given a feed of colostrums by stomach tube, then returned to the ewe, or, if it is still weak, placed in an "aftercare" unit



Intraperitoneal injection in newly borne lamb

6- Do not return the lamb to the ewe unless it is strong

enough to nurse unaided.

7-The aftercare unit has individual compartments for each lamb, with a heat lamp overhead.

C-Colostrum

1-Once the lamb's rectal temperature has reached 37°C, its heat production system should be restarted with colostrums.

2-Give colostrums by stomach tube at 50 mL/kg body weight.



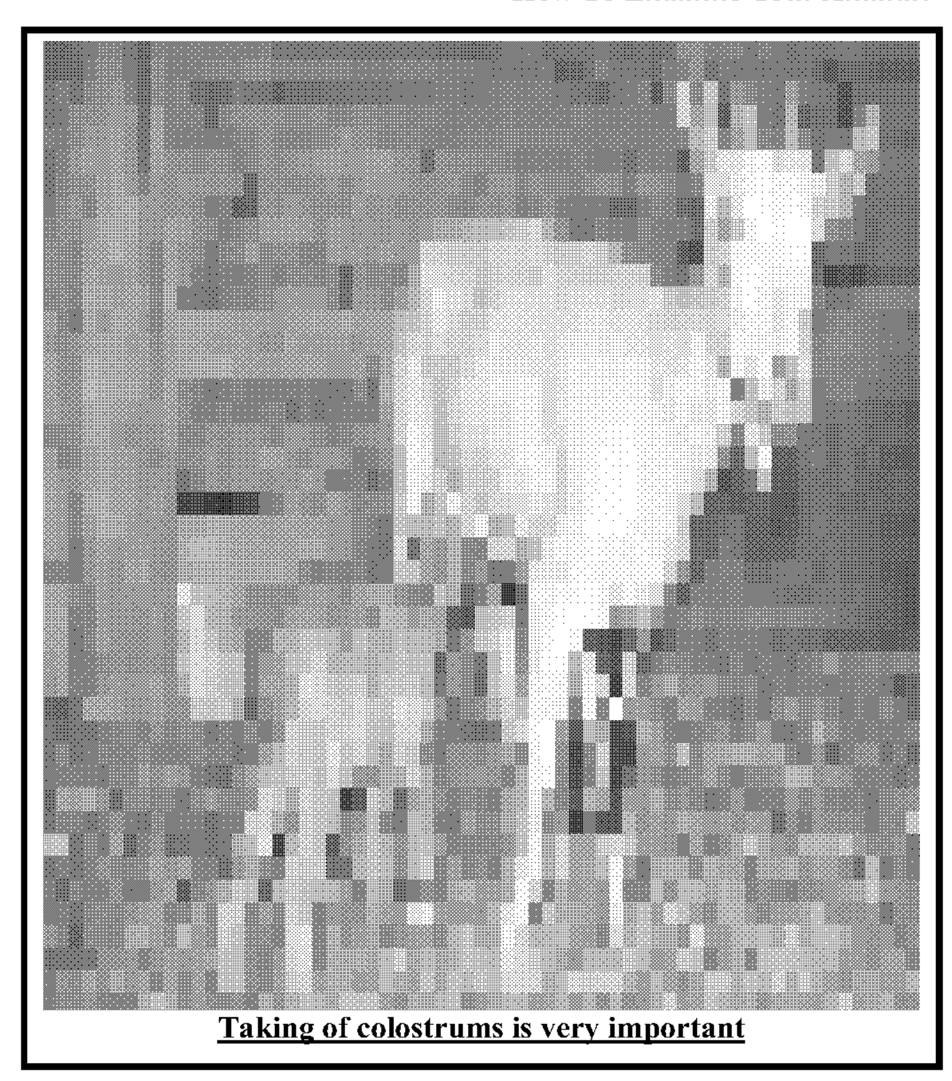
Stomach tube in lamb

3-Usually there is little problem with the ewe refusing the lamb after treatment.

4-Ewe's colostrum is obviously the best, but cow colostrums can be used.

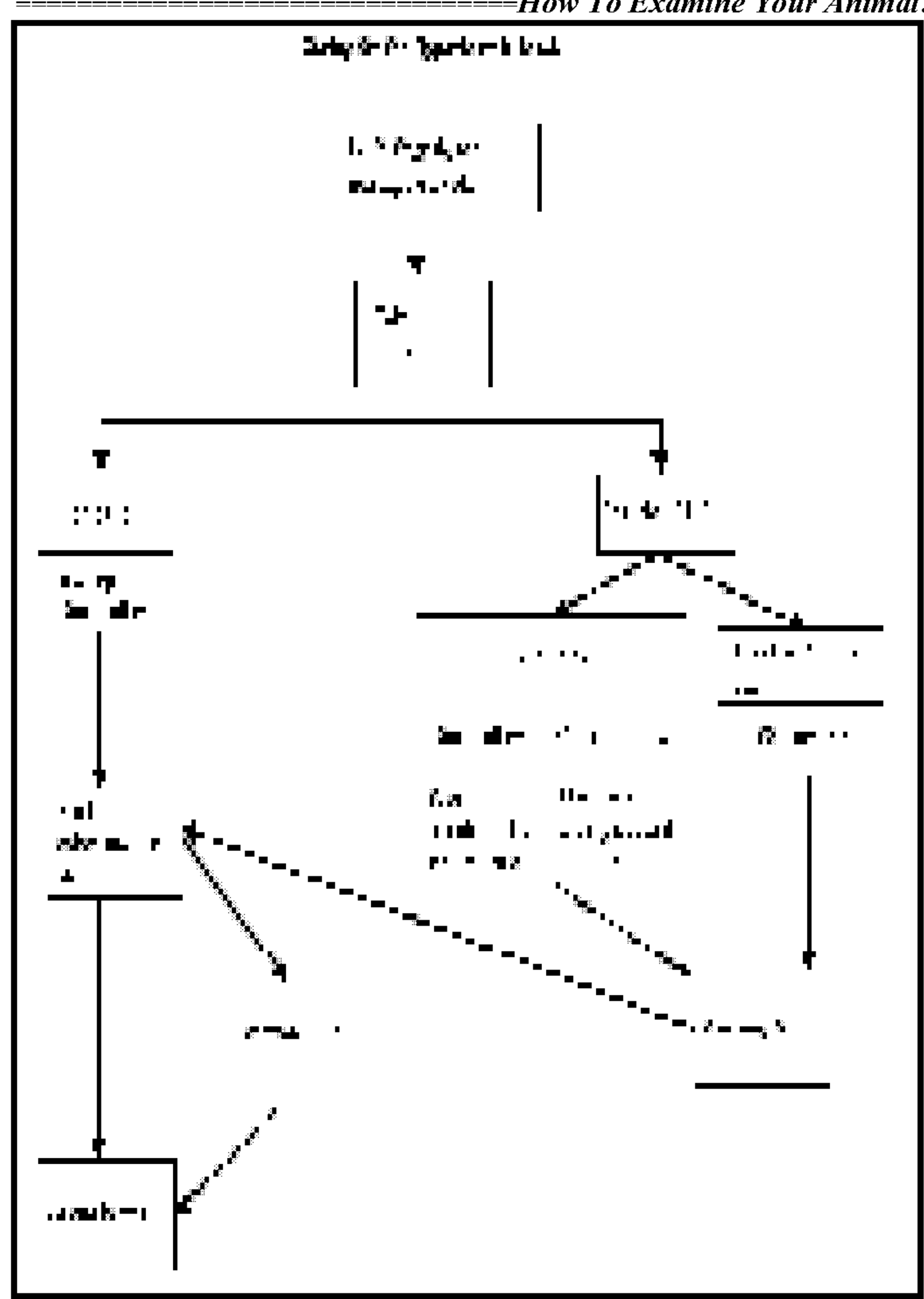
5-Collect and freeze the colostrums of the cow in 500 mL batches. Thaw it in a water bath at 35°C, never in a microwave as this will denature the complex proteins in the colostrums.

6-As in all conditions, prevention is the best cure for hypothermia.



Taking of colostrums is very important

*Good nutrition during gestation, good lambing quarters, observation of the ewe and lamb at lambing and assisting where necessary, will go a long way to preventing lamb losses from hypothermia.



Respiration In small Ruminants

*One of the most important signs of healthy sheep and goat, is have a good and healthy respiration.

*Examination of respiration in sheep and goat usually occurred by inspection to detecte:-

(I)-Type of respiration (II)-Rate of respiration

(III)-Respiratory depth or amplitude (IV)-Rhythm of respiration

(I)-Type Of Respiration:-

*Type of respiration depends uopn the major msucular group that participate in the act of respiration (expiration and inspiration), so the type of respirationin sheep and goat is "***abdominal respiration***" that due to the abdominal muscles participate by the major part of the reaspiratoy movements.

*Abnormal types of respiration in sheep and goat vary accorrding to the healthy status of the respiratoy and abdominal cavity, so it may be:-

1-Wholy abdominal respiration:- Presented when ther is diseased problem in the thoracic cavity that hinder the thoracic muscular group to participate in a good manner in ther respiratory movements as in case of:-

-Plurisy -Sever pneumonia -Painful conditions in the chest area

2-Wholy thoracic respiration :- That presented when there are diseaed problems in the abdominal cavity that hinder the abdominal muscular group to particapte in a good manner in the respiratoy movements as in case of :- -Impaction - Tempany

- Abomasitis or abomasal ulcer -Peritonitis

(II)-Rate Of Respiration:-

*Rate of respiration means that the number of respiratory cycles per minute which can be counted by observing the chest or abdominal movements or detection the expiratory air in front of the nostrils.

*Normal respiratory rate in sheep and goat varies between ***15-30 respiratory cycles per minute.***

*There are many physical and physiological factors which should be taken in our consideration during examination of respiration in sheep and goat as the climatic condition in wich the respiratory rate usually increased in the hot weather than that of the cold one, as well as in some physiological processes as parturation or pregnancy.

*Abnormal respiratory rate may be :-

A- Increased respiratory rate (polypnoea) as in case of :-

-Impaction -Tempany

-Febril conditions

-Early stage of inflammatory conditons in the respiratory tract as acompansatroy role to meet the oxygen demand of the animal.

B-Decreased respiratory rate (oligopnoea) as in case of :-

-Hypocalcemia -Brain diseases

-Prior to death as in case of hypomagnesemia

-Hypothermia especailly in new born lambs or kids.

(III)-Respiratory depth or amplitude:-

*Respiratory depth means that the force of the respiratory movements of the muscular group that responsible for respiration and it may be abnormal as in the form of :-

A-Deep or labourd respiration as incase of.-

-Obestruction of the upper respiratory tract.

-Sever pneumonia -Rhinitis -Estrous ovis infection

-Presence of the animal in high altitude where there is law oxygen

B-Shallow respiration as in case of :-

-Hypomagensemia -Esophegeal obestruction (choke)

-Tetanus -Ketosis

-Pluerisy -Impaction Tempany

-Peritoneitis -Prior to death

-Late stage of pregnancy due to large sized gravid uterus especailly in the animals that have twines or triples.

(IV)-Rhythm of respiration.-

*Rhythm of respiration means that the time interval between succesful respiratory cycles and it is usually "***regular***" in sheep and goat.

*Abnormal respiratory rhythm usually associated with almost(85 %) cases of abnormal respiratory type, rate and depth, as well as all cases of dyspnoea either inspiratory or expiratory or mixed dyspnoea usually assoicated with abnormal respiratroy rhythm eitehr in the form of prolonged inspiration or expiration.

Mucous Membrane In Sheep and Goat

*Healthy conjuncitival mucous membrane is one of the most common clinical signs of healthy sheep and goat and this healthy status reflected on the general healthy condtion of sheep and goat.

*Healthy characters of the conjuncitival mucous membrane are pale rosy coloured, smooth and free from any lesions(as ulcers), foreign body or discharges.



Examination of mucous membrane in sheep

*Abnormalities of the conjuncitival mucous membrane may be appeared in the form of:-

A-Presence of lacremation or discharges:- as in cas of

-Trauma

-Conjuncitivits

-Infectious keratoconjuncitivitis(IKC)

-Blood parasites

-Inflammation of nasolacremal duct

B-Abnoraml coloured mucous membrane as in case of :-

1-Pale coloured mucous membrane as in case of

-Anaemia
-Dehydration and emaciation
-Malnutrition and deficiecny
-Prior to death
-Parasitism either interanl or external
-Hypothermia

2-Icteric mucous membrane:- as incase of

-Fascioliasis
-Liver diseases
-Haemolytic anaemia
-Jaundice

3-Congested mucous membrane asincase of :-

-Conjuncitivitis
-Infectious keratoconjuncitivitis
-Febrile conditions and hyperthermia
-Trauma

4-Cyanosed mucous membrane as in case of :-

-Almost cases of dyspnoea or respiratory tract obestruction, as well as cardiovascular diseases usually associated with cyanosed mucous membran due to lack of blood oxygenation.

NB.

*Examniation of the conjuncitival mucous membrane usually associated with examination of the eye to detect any defects or lesion in the eye as presence of cataract as in case of blood parasites……….etc.

Examination Of Pulse In Small Ruminants

*Examination of the pulse together with examination of the superficial blood vessels and heart give us good idea about the healthy condition of the cardiovascular system, as well as the general health condition of sheep and goat.

*In this part we will disscuse examination of pulse and later we will disscuse examination of the heart and blood vessels.

*Pulse in sheep and goat usually taken from superficial and medium sized artery as "***femoral artery***" (as in dog and cat) which located in the inner aspect of the thigh.

*Normal pulse rate in ***sheep is 70-80*** and in ***goat 70-90*** pulse beat per minute and its usually regular in the rhythm.

*There are some physical and physiological factors affecting in the pulse, as the pulse rate may be increased after eating, exercise or after excitation or hard manibulation of the animal, so its recommended that taking of pulse as a first step of physical examination of the animal to avoid misdiagnosis resulting from increased pulse rate due to excitation of the animal.

*Young animal has pulse rate more than that of adult, as well as pregnancy , parturation or lactation may increase the pulse rate than other conditions.

*Abnormalities of the pulse amy be in the formof :-

A-Increased pulse rate (Tachycardia) as in case of:-

-Febril diseases -Tetanus

-Anaemia -Excitation or faer

-Hypomagnesemia

-Tempany

-Impaction

-Parturation or pregnancy.

-Some respiratory affections as pneumonia.

B-Decreased pulse rate(bradycardia) as in case of:-

-Dehydration

-Prior to death

-Emaciation

-Hypocalcemia

-Hypothermia especailly in new born lambs and kids

C-Strong pulse as in case of :-

-Tetanus

-Hypomagnesemia

-Febrile conditions

D- Weak pulse as in case of :-

-Hypocalcemia

-Hypothermia

-Prior to death

-Ameanic and emaciated animal

Lymph Nodes In Sheep And Goat

*The most common superfical lymph nodes which have clinical significant as the following:-

1-Prescapular lymph node:- Present in front of and slightly dorsal of the shoulder joint**(B).**

2-Prefemoral lymph node:-Present in front of and slightly dorsal of the stiffle joint **(C).**

3-Supramammary lymph node:- Present caudal and dorsal of the udder**(D)**

4-Superficial inguainal lymph node:-Present in the neck of the scrotum.

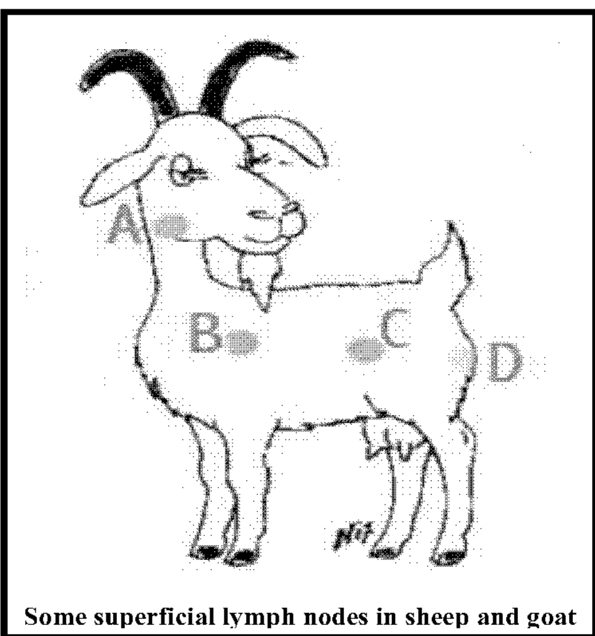
5-Reteropharyngeal lymh node:- Present caudally to the pharynx

6-Parotide lymph node:- Present at the base of the ear.

7-Sub-maxillary lymph node:- Present in the intermandibular space**.(A)**

*The most satisfactory method of clinical examination of the superficial lymph node is by palpation.

*Normal characters of the superficial lymph nodes in sheep and goat are firm,movable, and painless within the normal size (need experience).



Some superficial lymph nodes in sheep and goat

*Normal charcters of superficial lymph nodes may be changed in the form of inflammed or swelled and painfull with liquid or dough to solid contents as incase of:-

*Orchaitis

*Lymphosarcoma

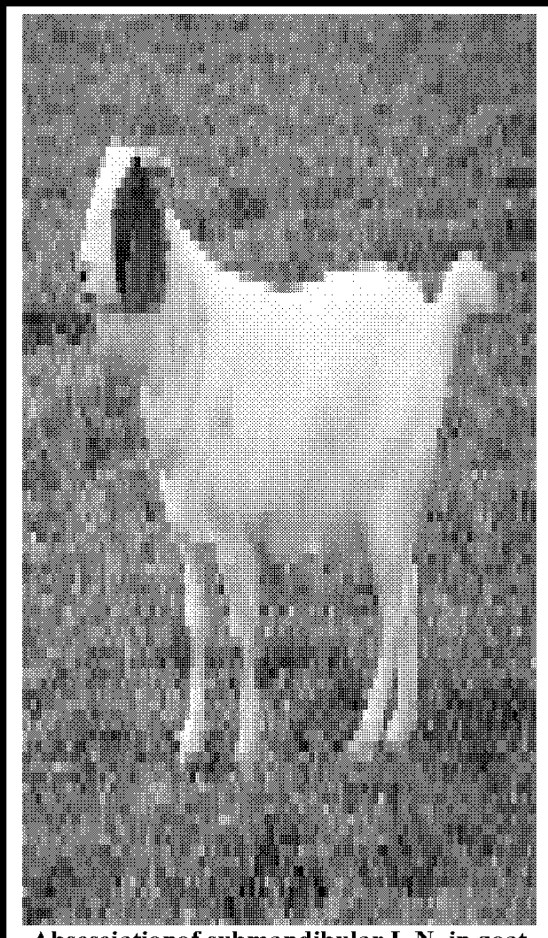
*Pharyngitis

*Caseous lymphadenitis (Corynebacterium pseudotuberculosis)

*Actinomycosis(Corynebacterium pyogenes) -

*Mastitis

*Absseciation of the lymph node or lymphadentitis



Absesciationof submandibular L.N. in goat

Digestive System In Small Ruminants

Functions Of The Digestive System:

1-Prehension and mastication.   2 Swallowing or degluitation

3-Rumination (regurgetation- resalivation- remastication & reswallowing).

4-Digestion (microbial, mechanical and enzymatic).

5-Absorption through the stomach and small intestine.

6-Excretion through large intestine.

7-Endocrin function through the pancreatic secretions.

Any disturbarces in such functions may lead to digestive disorders which manifested in the following signs.

Manifestation Of Digestive System Disorders:

1-Disturbances in prehension and mastication.

2-Disturbances in swallowing (degliutation).

3- Disturbances in appetite

4-Disturnbances in water intake.

5-Vomiting and regurgetation of food.   6-Abdominal pain.

7-Diarrhea and constipation.

1-Prehension And Masticion:

A-Normal prehension in sheep and goats occurred by using of lips, (so it's not susceptible to traumatic pericarditis) and it has selective character during prehension.

B-Mastication mainly consists of chewing the food with the teeth associated with movement of the tongue and cheeks with the hard palate keep the food between the teeth.

C-Any lesions of the oragns of prehension and mastication may be reflected on the animal in the form of abnormal prehension and/or mastication.

D- Abnormal prehensions mastication usually manifested in:

*Dropping the food from the mouth. *Incomplete loss of appetite

*Passing undigested food particles in the faeces due to improper masitcation.

*Difficult or painfull mastication. *Sialosis or excessive sailvation.

*Smacking of the lips.

E-Abnormal prehension may indicate to:

-Stomatitis or glassitis -Blue tongue. -Bottle jaw.

-Lumpy jaw (actinomycosis). - FMD.

-Foreign body in the oral cavity. -Wooden tongue (Actinobacillosis)

-Sharp teeth or periodentitis or broken mouth - orf.

-Tetanous -Hypomagnesemia.

2-Swallowing (Degliutation):-

A-Swallwing or degliutation means that trnasporation of masticated food from the mouth to the stomach through pharynx and oesophagus and any disturbances in swallowing descriped as ***dysphagia.***

B- Dysphagia can be manifested in the form of:-

*Forcefull attempts to swallow with extension of head and neck.

*Violent contraction of the muscles of the neck and abdomen during swallowing.

*Regurgetation of food from the mouth and nostriles specially due to pharyngeal dysphagia.

*Excessive salivation and dropping of food from the mouth.

*Snorting in some cases .

C- Diseases causing dysphagia as:-

*Chock (oesophegeal obstruction). *Blue tongue.

*Rabies. *Goiter

*Painful or inflammatory conditions in the pharynx or oesophagus as pharyngitis or esophegitis.

*Hypomagnesemia.

3-Disturbances In Appetite:-

A-Increased appetite.

-Manifested in consumption of large amount of food (hyperorexia or hyperphagia)as in case of :-

*Gastrointestinal parasitesm. *External parasites.

*Pancretic defects. *Normally during pregnancy or lactation.

B-Loss of appetite :

-Manifested in decreased the food consumption and it may be:-

-Incomplete loss of appetite (inappetance) as in case of:-

*Sudden change in diet. *Simple indigestion.

*Painful conditions. *Cobalt deficiency.

*Ruminal prakeratosis. *Oral affections.

-Complete loss of appetite (anorexia) as in case of:-

*Febrial diseases. *Acute tempany or impaction.

C- Depraivd appetite: or pica. manifested in the form of eating of unusuall diet of sheep and goat as in case of :-

*Ketosis. *Rabies .

*Deficiency of phosphorous, calcium , cobalt or protein.

4-Disturbances In Water Intakes:

A-Thirst, Manifested by increase the water intake (polydepsia) as in case of

*Dehydration. *Haemorrhage.

*Chronic diarrhoea. *Febrial conditions.

*Impaction. * Excessive salivation (ptyalism or sialosis).

B- Excessive salivation or sialosis:- it may be due to infectious or non infectious casues as the following:-

(I)-Infectious causes of sialosis:-

*Actinomycosis *Actinobocillosis (wooden tongue). *Tetanus.

*Blue tongue. *Rabies. *F.M.D.

(II)- Non-infectious causes of sialosis:

*Iodism. *Choke. *Stomatitis(due to non infectious casues).

*Orgamophosphorous poisoning. *Hypomagnesemia.

C-Dry mouth or decreased salivation :- as in case of

*Atropin toxicity. *Dyspnoed due to mouth breath.

*Thialolithiasis(calculi in salivary ducts). *Febrile conditions.

D-Decrease in water intake. manifested in the form of decreasesd the consumpation of water than the normal level as in case of:-

*Tempany. *Prior to death.

5-Vomiting And Regurgetation:

-Regurgetation of food occurs normally in ruminants as normal step of rumination by forcing the ingesta from the stomach by the antiprestalitic movements of the oesophagous to the mouth and pharynx.

-When regurgetation occurred outside the mouth it is considedred as abnormal regurgetation as in case of:-

*Regurgitation of food only due to incomplete esophogeal obstruction.

*Regurgitation of food and water due to complete esophegeal obstruction.

*Occurs after 1- 1 ½ after swallowing due to pyloric obstruction.

*Occurs after more than 2 hours due to intestinal obstruction.

-Vomiting: Means that its forceful ejection of food and liquide gastrointestinal content through oesophegus and mouth which may be:

(I)-**False or Pojectile vomiting:**

-It's the most common type of vomiting in the ruminants due to stimulation of antiprestaletic movements of the oesophagus as in case of :

*Over feeding. *Some plant poisoning.

*Choke. *Acidosis.

*Injection of large amount of fluid in the rumen during treatment of some ruminal affections.

N.B.: Pojectile or false vomiting occurred usually without retching movements i.e., without contraction of abdomenal muscles or extension of head and neck.

(II)-True vomiting:

-It's occurred with retching movement. -Less common in ruminants.

-Occurred due to stimulation of vomiting cente r(not present in ruminants)

-If its occurred in the ruminants, it considered as ominous signs of grave (harmful) involvement of the alimentary tract and it's usually lead to or followed by death due to:- *Aspiration pneumona or layngeal obstruction.

6-Cosntipation, Tenesmus And Diahrrea:

A-Constipation: Means that difficulte evacuation of feces as in case of :

*Impaction. *Painful condition of anus.

*Chronic dehydration. *Proctitis (inflammation of the rectum).

*Colitis due to coccidiosis.

-Constipation may be mainfested by tenesmus (painful and forceful defecation).

B- Diahrrea:- Means that increase the fluids contents of the fecal matter with or without increase the frequency of defecation and it may be due to infectious causes which associated with high body tepmerature as in case of bacterail or viral infection of GIT or may by non-infectious causes which associated with normal body tepmerature as in case of sudden change in diet.

7-Abdominal Pain: can be manifested by:-

*Arched back. *Laying down and getting up frequently.

*Restlessness. *Looking to the flank region.

*Kicking of the abdomen. *Grinding on the teeth

-Abdmonial pain can be presented in case of:-

*Peritonitis. *Tempany *Impaction *Ruminitis

*Urine retention (urolithiasis). *Abomasal ulcer

*Urogenital inflammatory affections as metritis, nephritis…….etc.

Physical Examination Of Digestive System In Sheep And Goat.

(I)-Examination Of Oral Cavity: includes:

1-Examination of the oral mucous membrane and adour.

2-Examination of the tongue.

3-Examination of the oral teeth and jaw.

4-Examination of the opening and closure of mouth.

5-Salivation (mentioned before).

(II)-Examination Of Pharynx & Esophagus by :

1-External examination. 2-Inspection – palpation.

3-Internal examination. By endoscopy and stomach tube.

(II)-Examination Of Abdomen by :

1-Inspection.

2-Physical examination by palpation,percussion and auscultation.

(IV)-Special Methods include:

1-Ruminal juice analysis. 2-Fecal analysis.

3-Paracentesis. 4-Endoscopy.

5-Sonography. 6-Live function tests.

Examination Of Oral Cavity In Sheep & Goat

(I)-Oral Mucous Membrane:

-We can open the mouth by using of gag or by introducing the hand from angle of the mouth and holding the tongue outside the mouth and examine the oral mucouse membrane.

-Normal condition of the oral mucous membrane is smooth., pale rosey in colour and free from any abnormal lesions or structures.

-Abnormalities in the oral mucous membran may be in the form of :

A-Pale coloured oral mucous membran as in case of

Anaemia – Dehydration - Debility.

B-Congested mucous membrane: as in Stomatitis, FMD, Pyrexia, Actinomycosis, Actinobacilli

C-Icteric mucous membran : Joundic – Fascioliasis or liver affections.

D-Cyanosed mucous membran as in case of :

-Respiratory and condiovacular diseases.

-Lead poisoning Dyspnoea -Blue tangue.

E-Ulceration in the oral mucous membran as in case of :

-Pest de petite ruminant. -FMD. -Ulcerative stomatitis.

N.B.: During clinical examination of the oral cavity we can detecte the oral breath or adour which normally is acceptable or aromatic, but in some pathological conditions **It may be:**

****Urine frous adour*** as in case of → uremia or urine retention.

Aceton adour as in case of→ ketosis (pregnancy toxemia).

****Offensive*** as in case of → Gangrenous pneumania neglected case of stomatitis or loss teeth or periodentitis.

(II)-Examination of Tongue :

It may be inflamed or enlarged as in case of:

*Blue tongue. *Actinobacillosis (wooden tongue).

*Glositis. *Wound *Traumatic lesions.

(III)- Examination of Teeth & Jaw:


Examination of oral cavity in sheep with ulcer in the gum

1-To detect the age of animal.

2-To detect any broken, loss or sharp teeth or other lesions as in case of *Actinomycosis (lumpy jaw). *Facioliasis (Bottle jaw).

* Periodenitis or dental fistula

3-Difficulte in closure of the mouth as in case of

*Blue tongue

*Paralytic form of rabies.

*Actinobacillosis.

*Foreign body.

4-Difficult in opening of the mouth as in case of :

*Tetanus. *Pahyngitis.

*Hypomagnesemia. *Strychnin poisoning.

Pharyx & Esophagus In Sheep & Goat:

(A)-External Examination:

1-Inspection : Observation of the area of throat is very important to detect any swelling or abnormal structures at the area of throat and neck as in case of :

*Choke *Bottle jaw. *Caseous lymphadenitis

*Enlargement of pharyngeal lymph nodes *Goiter

2-Palpation: By the tipe of fingers to detected the nature of such swelling and examining of other deep sited structures.

-In case of hot and painful palpation this is indicate that the presence swelling is inflammatory in it's nature in in lymphadenitis or pharyngitis.

-In case of cold and painless palpation this is indicate that the presence swelling is non-inflammatory in its' nature as in cas of goiter or choke.

(B)-Internal Examination:

-By using of pharyngeoscope or oesophegoscopy to examine and detecte. any abnormalities in the pharyngeal or oesophegeal mucous membranes or walls.

-By using of stomach tube for diagnosis case of choke and tempany,as the stomach tube can be pass through the esophegaus in case of incomplete esophegeal obestruction, while it is impossible to be pass in case of complete obestruction.

Examination Of Abdomen In Sheep & Goat

A-Inspection: * Inspection of the hunger hallow (left sublumber fossa) and all of the abdomen to detecte :

(I)-Disappeared hunger fossa as in case of : -Tempany. -Fatty animal. -Pyometria -Last stage of pregnancy. -Impaction

-Urine retention or ruptured urinary bladder.

(II)-Increased size of hunger fossa as in case of:

-Emaciation. -Dehydration.

(III)-Generalized distention of abdomen: As in case of :

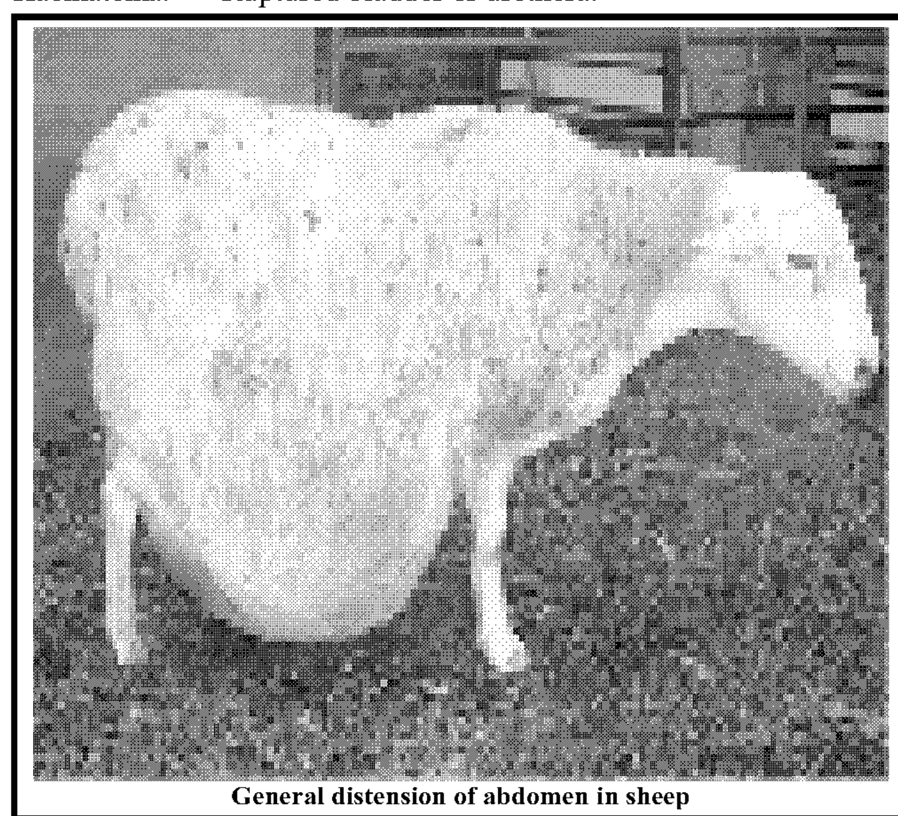
-Acute tempany or impaction. – Ascitis

-Late stage of pregnancy. -Urine retention .

***(IV)- Localized distention of the abdomen*: As in**

-Abscess - Hernia -Mastitis

- Haematema. -Ruptured bladder or urethera.



General distension of abdomen in sheep

***(V)-Generalized decrease in abdominal size* as in:**

-Emaciation. -Dehydration. -Parasitism -Chronic diarrhoea.

-Long period of starvation or nutritional deficiency.

Physical Examination Of The Abdomen "Stomach'.

*Stomach in small ruminants consists of 4 compartments :

-Rumen - Reticulumn - Omasum. - Abomasum

(I)-Rumen:

1-It's the first and the largest part of the stomach represente about 75% of the total area of the stomach and it is presented on the left side of abdomen and it can be examined (inspection,palpation ,percussion or auscultation) at the left sublumber fossa.

2-There is depression at the external surface of the rumen which corrosponding to projection from inner surface. Called ruminal pillar which divides the rumen into 2 saces (dorsal and venteral ruminal saces).

*3- **Palpation of the rumen:*** *Normally → "***Resilent***" palpation.and abnormally as in case of :-

Doughy palpation as in case of → Impaction.

Emphysematous palpation as in case of → Tempany.

Painfull palpation as in case of → Peritonitis.

4-Auscultation of the rumen*:** Normally "Gurgling or Booming***" sound in the normal rate of 3-6 / 2minutes. in sheep.and 2- 4 /2m. in goats, the sound occurred due to the movement of the fluid and food particles in the rumen which imposed by gase bubles.

5-Abnormal auscultation of the rumen :

Increased ruminal movements as in case of early stage of diarrhoea.

Decreased ruminal movement as in case of :-

-Impaction. -Ruminitis. –Tempany and simple indigestion.

-Ruminal parakeratosis. -Febraile conditions. –Pregnancy toxemia

6-Percussion of the rumen Normal percussion resembling to **"Resonant sound"** while abnormal percussion may be :

Dull percussion as in case of → Impaction.

Tympanic percussion as in case of→ Tempany.

(II)-Reticulum:

1-It follows the rumen and represent about 7% of the total size of the stomach, it is the most cranially situated comportment of the stomach apposite to 6-8th intercostals paces on the left side of the abdomen.

2-Normal auscultation of the reticulum is **"Swiching sound".**

3-The sound present for few seconds and disappeared and reappeared again accorrding to the ruminal movementes and the sound disappeared in case of febrile conditions or impacation.

(III)-Omasum:

1-It follows the reticulum and represent 5% of the total size of the stomach, lies on the right side of the medium plain of the body and rest on the abomasum.

2-It's left surface is related to the reticulum, rumen and abomasum while it's right surface is related to the liver, diaphragm and small area of the abdominal wall opposite to 7-9th rib on the right side.

3-It cannot be examined clinically because it's rested on the abomasum, so examine the other three compartments of the stomach which can gives of point of view about the healthy states of the omasum.

(IV)-Abomasum: *'True stomach' or "glandular stomach "*

1-It's ressembling the monogestric stomach in mono-gastric animal. compressing about 8-10% of the total size of the stomach.and it's ***'U'*** shaped structure laying on the abdominal floor on the right side opposite to 7-9th ribs or intercostal spaces.

2-The sound called "***tinkling or high pitched metalic sound***"once per 15 minutes and can be stimulated by tactail percussion over the abdomen.

3-Absence of the abomasal movement as in case of abomasal displacement -impaction- fever -tempany- abomasal ulcers.

N.B.:

*Examination of the intestine not available clinically because it occupyes small area of the abdominal cavity due to large capacity of the stomach. But we can take point of view about the intestinal healthy status by inspection as → Diarrhoea or Constipation.

Respiratory System In Sheep & Goat

Manifestations Of Respiratory Diseases:

1-Dyspnoea:-

Dyspnoea means that difficult in respiration and it is meanifested on the animal in form of:-

*Dialated nostrilos. *Mouth breath. *Extention of head and neck.

*Pumping or pulging of anus according to the degree of dyspnoea.

Types of dyspnoea :

A-Inspiratory dyspnoea. B-Expiratory dyspnoea.

C-Mixed or indeterminated dyspnoea.

A-Inspiratory dyspnoea: That type of dyspnoea which associated with difficulty in the inspiratory phase of respiration as in case of:-

-Rhinitis. -Oestrous ovis. -Pulmonary odema

-Bronchopneumonia. -Obstruction of upper respiratory tract.

B-Expiratory dyspnoea: That type of dyspnoea which associated with difficulty in the expiratory phase of respiration as in case of:-

-Lung collaps or Consiledation. -Pulmonary emphysema.

-Pleurisy or pleural adhesion.

C-Mixed or indeterminated dyspnoea: That type of dyspnoea which associated with difficulty in both inspiratory and expiratory phase of respiration as in case of:-

-Anaemia. -Cardiac diseases. - Brain diseases.

-Sever pneumonia. -Hypomagnesemia.

2-Cough:- Varies according to the etiological causes and its nature as the following:-

A-Dry cough**:** (non-productive cough) That type of cough which not associated with exudate as in case of .-

-Parasitic pneumonia -Interstitial pneumonia (viral infection).

B-Moist cough: (productive cough) That type of cough which associated with exudate as in case of- -Bronchopneumonia.

-Bronchitis. -Acute laryngitis. -Bacterial pneumonia.

N.B.: Moist cough (productive cough) can be detected by that the animal show the swallowing movement after the end of coughing, with presence of nasal discharges and sputum on the stale .

C- Painful cough:- That type of cough which associated with the signs of chest pain as grunting or extension of head and neck or abduction of forlegs in case of .-

-Pleurisy -Fractured ribe. -Chest pain. -Severe broncho pneumonia

D- Paroxysmal cough**:** That means many coughs occurred one after the other in the same time and it can be repeated many times in the day as in case of : -Catarrhal laryngitis. -Parasitic bronchitis. -Pharyngitis

-Chronic bornhcitis. -Interstitial pneumonia.

N.B.: Cough can be induced by digital pressure on the junction between the larynx and trachea or at the 3rd tracheal ring or by occlusion of the nostrils about 30-60 second.

*More than one type of cough may be present in the same time as in case of interstitial pneumonia, there are dry and paroxysmal cough.

3-Sneezing:- It is a forced expiration due to irritation of the respiratory mucosa of the upper respiratory tract due to presense of irritant or antigen as in case of :-

-Rhinitis. -Osterous ovis -Inhalation of irritant material or smoke.

4-Nasal discharges: as in case of

-Bronchitis. -Pulmonary odema. -Pneumonia.

-Pulmonary haemorrhage (haemorrhagic discharge). -Oestrous ovis.

-Gangrenous pneumonia. (Very offensive discharge) -Blue tongue.

5-Movement of nostrils (involuntary movementes): as in case of

-Chronic bronchitis. -Most cases of dyspnoea. -Hydrothorax.

-Laryngeal odema. -Paralysis or ruptured diaphragm.

6-Abnormal sound (stredores): as in case of

-Oestrous ovis. -Fructured nasal bone. -Laryngitis and tracheaitis.

-Accmmulation of nasal discharge in the nasal cavity.

-Enlargement or inflammation of the retropharngeal lymph node.

-Sever painful conditions in the chest usually associated with groagning sound.

7-Epistaxis: as in case of :-

* Anthrax. *Trauma

*Rhinitis. *Pulmonary haemorrhage.

*Sever pneumonia.

8-Abnormal Respiration:

-Any abnormalities in the respiratory rate, type rhythem or deepth. Considered as manifestations of respiratory diseases

Physical Examination Of the Respiratory System

Includes the following points:

(I)-Examination Of Paranasal Sinus: (Frontal & maxillary).

A-Inspection of paranasal sinuses:- By observation of the face of the animal to detecte any pulging of the skine over the insuses as in case of paranasal sinusitis or presence of depression as in case of fructure of paranasal bone.

B-Palpation of paranasal sinuses:- If there is painful palapation with hotness this idication of inflammatory condition in the paranasal sinuses as in case of paranasal sinusitis.

C-Percussion of paranasal sinuses:-

Normal percussion is → ***Tympanic*** sound , while abnormal percussion may be ***Dull*** sound as in case of → Sinusitis or Osterous ovis infection which may be associated with some complications of paranasal sinusitis as:- Inflammation of nasolacerimal duct. *Painful mastication.

*Nasal discharge according to the affected side. *Dental fistula.

(II)-Examination Of Pharynx:-Mentioned before in digestive system

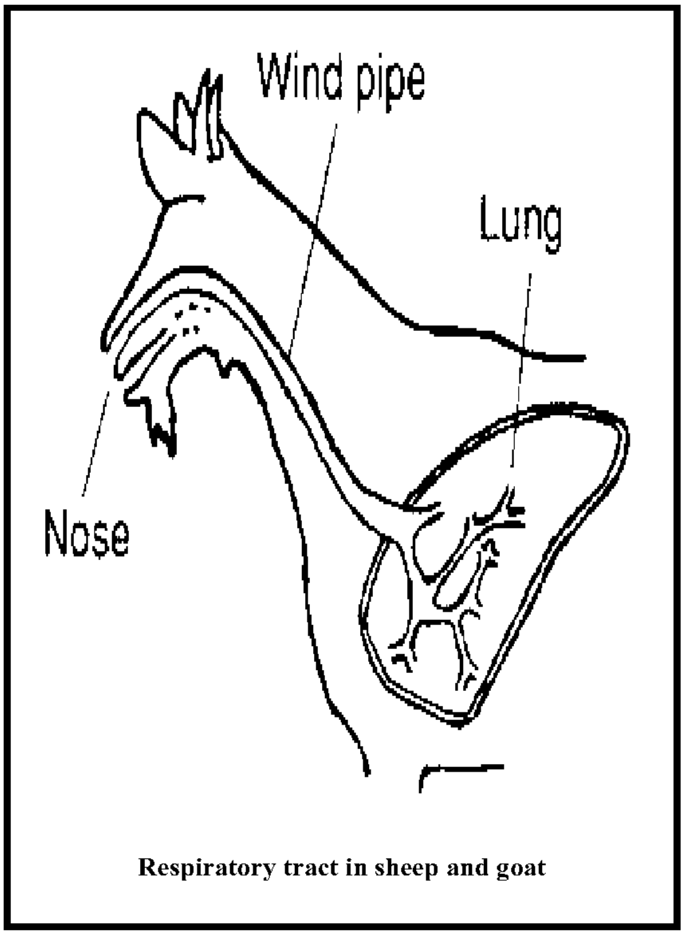
(IV)- Examination Of Larynx And Trachea:

A-External examination by Inspection, Palpation and Auscultation.

1-Inspection of larynx and trachea:- By observation of the area of throat to detecte any abnormal swelling in the region of larynx and trachea.

As in case of: *Laryngitis. *Tracheaitis *Odema.

*Goiter *Lymphadinitis



Respiratory tract in sheep and goat

2-Palpation of larynx and trachea:- By using of the tips of finger to detecte the nature of such swelling either inflammatory which associated by hotness and painful palpation as in case of:-*Lymphadinitis *Lrayngitis *Tracheaitis or:- Non-inflammatory which assoicated by hotless and painless palpation as in case of ***goiter*** or ***odema***.

3-Auscultation of larynx and trachea:

*Normal sound similar to the ***'CH'*** sound, while abnormal ausultation may be:-****Grunting or Groaning*** sound as in case of painful condition.

Or Harsh sound as in case of → laryngitis tracheaitis or bronchitis.

B-Internal Examination Of Larynx And Trachea:- By endoscopy to examine the laryngeal and tracheal mucous membranes.

Examination Of Lung (Chest)In Sheep &Goat

(I)-Inspection Of Chest Area:- To detecte any abnormalities in the respiratory rate, depth, rhthym and type of respiration.

(II)-Percussion Of the area of the chest:-

*Normal percussion of chest area is "***Resonant***" sound due to vibration of air in the lung.

*Abnormal percussion of the chest area may be: -

1-Hyperresonant percussion → Due to presence of large amount of air in the lung as in case of pulmonary emphysema.

2-Dull Percussion: Due to that, the air in the lung is replaced by fluid or tissue as in case of :

-Pulmonary odema.

- Pulmonary haemorrhage.

-Consiledation of lung as in late stage of pneumonia.

-Interstitial pneumonia.

-Neoplasma or Abscess.

3-Tympanic Percussion**:-**as in case of

-Fibrinous pneumonia. -S/C emphysema.

N.B.: Percussion of the chest area may associated with sings of chest pain as in case of:- Bronchitis – Pleurisy - Sever penumonia or fructured ribe.

(III)- Auscultation Of The Lung:-

1-Normal auscultation of the lung is ***Vesicular*** sound resembling to "*V*" sound during inspiration and *'F'* sound during expiration.

2-Vesicular sound may be:-

A-Exaggarated or hypervesicular or harsh sound usually during hyperpneoa and laborad respiration. as in cases of:-

*Exitation and fear.

*Suffering from pain.

*Stage of congestion of the lung (pneumonia).

*Bronchitis

B-Weak or attenuated vesicular sounds:as in case of :-

*S/C odema.

*Lung collapse (slight).

*Pulmonary congestion.

*Skin hyperkeratosis in the chest area

C-No-sound: It is occurred when the pulmonary air is replaced by fluid or tissues as in case of:-

*Pulmonary odema.

*Abscess *Tumour *Lung consiledation or collapse.

*Pulmonary haemorrhage. *Pulmonary adenomatosis

3-Abnormal sound during *Auscultation* may be:-

A-Moist rales: The sound similar sound which produced as a result of passing of stream of air through narrow tube under surface of water (Bubbling sound). as in case of :-

* Bronchitis. * Pulmonary odema.

* Pulmonary haemorrhage. * Bronchopneumonia.

*Aspiration pneumonia

B-Dry rales: -Similar to the sound which produced due to separation of two moisted finger from each other or rubbing a taft of hair which held between the fingers close to the ears. As in case of :-

*Early stage of bronchitis due to congestion.

*Pulmonary neoplasm.

*Chronic bronchitis due to excessive exudation.

*Spasm of bronchial muscles as in case of tetanus or hypomagnesemia.

*Pulmonary odema a long with bubbling (moist rales)may be assoicated by dray rales also, due to sever swelling of bronchial mucosa.

C-Frictional or pleuretic sound Simillar to the sound that produced by rubbing of dry two pieces of leather or scratching of ear by finger nails and it may be present in case of:-

*Plurisy *Pericarditis

Special Methods Of Examination Of Respiratory System:

1-Thoracocentesis 2 - X-ray. 3-Endoscopy.

4-Sinuse centesis. 5-Tracheal swab. 6-Ultrasouography

7-Lung biopsy and blood gase analysis.

8–CBC (Complete Blood Count)

9-Pulmonary function test

Cardiovascular System In Sheep & Goat

*Physical examination of the cardiovascular system includes examination of the heart, superficial blood vessels, visible mucous membrane as well as taking of pulse.

*Physical examination includes: Inspection. Palpation. Percussion. Auscultation.

A-Inspection:

*Inspection occurred by observation of what so called ‘apex beat’ that causing movement of the wall of the chest at the clinical area between 5 to 6th intercostals space during cardiac systole.

*Apex beat can be observed easily in good conditioned short coated, animal, with thin wall of the chest.

Apex beat very clear in cases of

-Fear and excitement. -Hemolytic anemia. -Cardiac hypertrophy.

-Cardiac displacement as in case thoracic neoplasm.

B- Palpation:

*Occurred by placing of the hand plan on the cardiac area on the left side 3-6 intercostals space, to detect the strength of cardiac impulse which may:

1-Weak or absent cardiac impulse as in case of:

-Hydrothorax.

-Mediastinal or pulmonary new plasma.

-Pleurisy.

2-Very clear and strong cardiac impulse as in case of :- Tachycardia.

C-Percussion:

*Percussion occurred at the area of cardiac dullness at 4th intercostal space. which reveal "***dull***" sound because the heart is free gas organ.

*Area of percussion can be detected by percussion over the chest (at the area of percussion and auscultation) directed down ward until the area of cardiac dullness (need experience) due to variation in the size of animals.

Abnormalities of percussion:

1-Increase the are of cardiac dullness: as in case of:-

-Cardiac hypertrophy or ventricular hypertrophy due to sever pneumonia.

-Hydropericardium.

-Haemepericardium.

-Pericarditis.

2-Decrease the area of cardiac dullness: as incase of

-Pulmonary emphysema.

-Pneumothorax.

-Pyothorax.

-Hydrothorax.

D-Auscultation Of The Heart:

*Auscultation of the heart is carried out by the same manner of that of auscultation of the lung by using of stethoscope.

*Auscultation occurred beneath and above the level of elbow joint in between 3-4th intercostals space.

*Normal heart sound:

-Lubb or systolic sound: due to contraction of the ventricles and closure of the atrioventericular valve it called systolic sound.

****Dupp or diastolic sound***: due to closure of the semilunar valve during relaxation of the ventricles.

N.B.: Heart sounds can be detected when the heart rate is slow but when the heart rate is rapid lubb and dupp sounds not be distinguished from each other.

Abnormalities Of The Heart By Auscultation:

1-Tachycardiac(increase the number of heart beat) as in case of

-Febrile conditions. -Hemorrhage. -Anemia.

- Hypomagnesaemia. -Cardiac hypertrophy.

-Acidosis and impaction.

2-Bradycardia (decrease the number of heart beat) as in case of :-

-Congestive heart failure. -Hypocalcaemia.

-Debility. -Dehydration.

-Prior to death.

3-Increase the intensity of the sound:

-Pulmonary affections. -High blood pressure.

-Tetanus.

-Aortic stenosis.

-Hypomagnesaemia.

4-Decrease the intensity of the heart sound:

-Debility. -Valvular insufficiency.

-Myocardial weakness.

5- 'Murmurs' as in case of :-

A-Endocardial murmurs: Originated from the heart itself and it may be:

****Systolic murmurs***:- Due to abnormalities in the atrioventricular valves.

-Its usually associated with systolic or lubb sounds as in case of:-

-Valvular stenosis or defect. -Anemia.

****Diastolic murmurs***: Due to abnormalities in the semilunar valve (pulmonary or aortic V).

B-Pericardial or exocardial Murmurs:- As frictional sound as in case of:- -Pleurisy. -Pericarditis.

*In case of pleurisy frictional sound usually associated with respiratory cycle. And detected at the area of auscultation of the lung and it may associate with cough (painful cough).

*In cases of pericarditis the sound not accompanied with respiratory cycle and it's detected mainly at the area of cardiac dullness.

Special Methods Of Examination:

*Electrocardiograph (ECG). *Radiography.

*Angiocardiography.

Urinary System In Sheep & Goat

*Clinical examination of the urinary system includes the following points.

A-Inspection to detect the manifestations of the urinary tract diseases as: 1-Posture of urination. 2- Frequency and polyuria.

3- Oliguria and anuria. 4- Dysuria.

B- Physical examination by palpation of Kidney, urinary bladder and urethra.

C-Special methods of examination as:

1- Kidney function test (urea – creatinine). 2-Radiography

3- Urethral catheterization. 4- Urinanalysis.

A-Manifestations Of Urinary Tract Disease:

1-Posture of urination:

*Female urinates by abduction of the hind legs and lowering the pelvic and increases the interaabdominal pressure then urinates.

*Male urinates by allowing the urine stream to pass through the urethra with slight protrusion of the penis outside the prepuce.

*Abnormal posture of urination is indicating to diseases arising from either, urinary system as in case of:-

-Cystitis. -Nephritis. -Uretheritis. -Urolithiasis.

*Non- urinary causes of abnormal posture of urination as in case of defects in vertebral column or spinal cord.

2-Frequency of urination and polyuria.

*The amount of urine and frequency of urination depend upon:

-Amount of water that consumed.
-Amount of water that excreted by other routs as respiration or defecation.
-Amount of water that produced by metabolic process or other process.
*Normally sheep and goat urinate 1-3 times/day, and abnormal frequency may be due to:-

Increase the frequency as in case of:-

-Nephritis. –Cystitis - Injection of diuretic.
-Drinking a late of water. -Cold exposure.

Decrease the frequency (in frequent urination)as in case of :-

-Urethritis. -Partial obstruction of the urethra.
-Spasm of the sphincter of urinary bladder.
-Conditions that associated with loss of body fluid as dehydration, diarrhea, or fever.

3-Oliguria and anuria:

*Oliguria means that decrease that amount of excreted urine as in case of:-
-Hemorrhage -Fever -Congestive heart failure. -Dehydration.
*Anuria means that complete absence of urination as in case of:-
-Complete urethral obstruction.
-Lesions in the lumbosacral segment of the spinal cord which leads to posterior paresis or paraplegia.

4-Dysuria or painful urination:

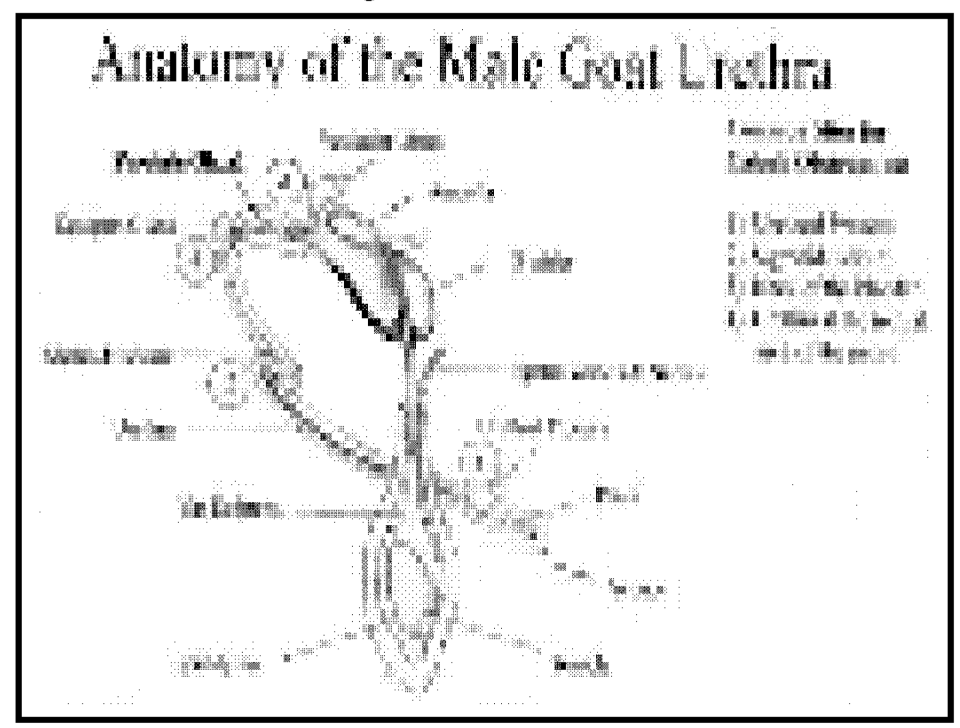
*Dysuria means that painful and difficult urination which manifested on the animal in the form of straining as in case of:-
-Cystitis -Hypomagnesaemia -Uretheritis. -Urethral obstruction.

N.B.: Dysuria may give the signs of abdominal pain.

Physical Examination Of Urinary Tract:-

*Palpation is the most satisfactory method of physical examination of urinary system in small ruminants.

A-Kidneys: *Kidneys in small ruminant are smooth surface and presented in the sub-lumber region as:



1-Right kidney: present ventral to the transverse process of the first two or three lumber vertebrae.

2-Left kidney: its position varies according to degree of ruminal distention as: when the rumen is not fill of by food the left kidney present in the same position of that of the right kidney, but when the

rumen is filled with ingesta the left kidney present in the level of 4-5 to 6^{th} lumber vertebra (physiological wandering kidney).

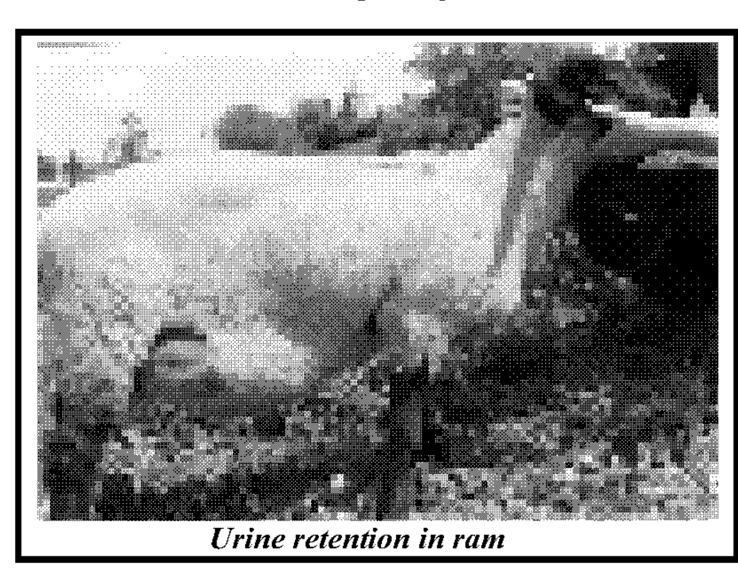
*We can examine the kidney by palpation to detect any abnormalities in the surface consistency, size and existence of pain as in case of:

-Hydronephorsis -Nephritis -Abscess or Neoplasm. -Pyelonephritis.

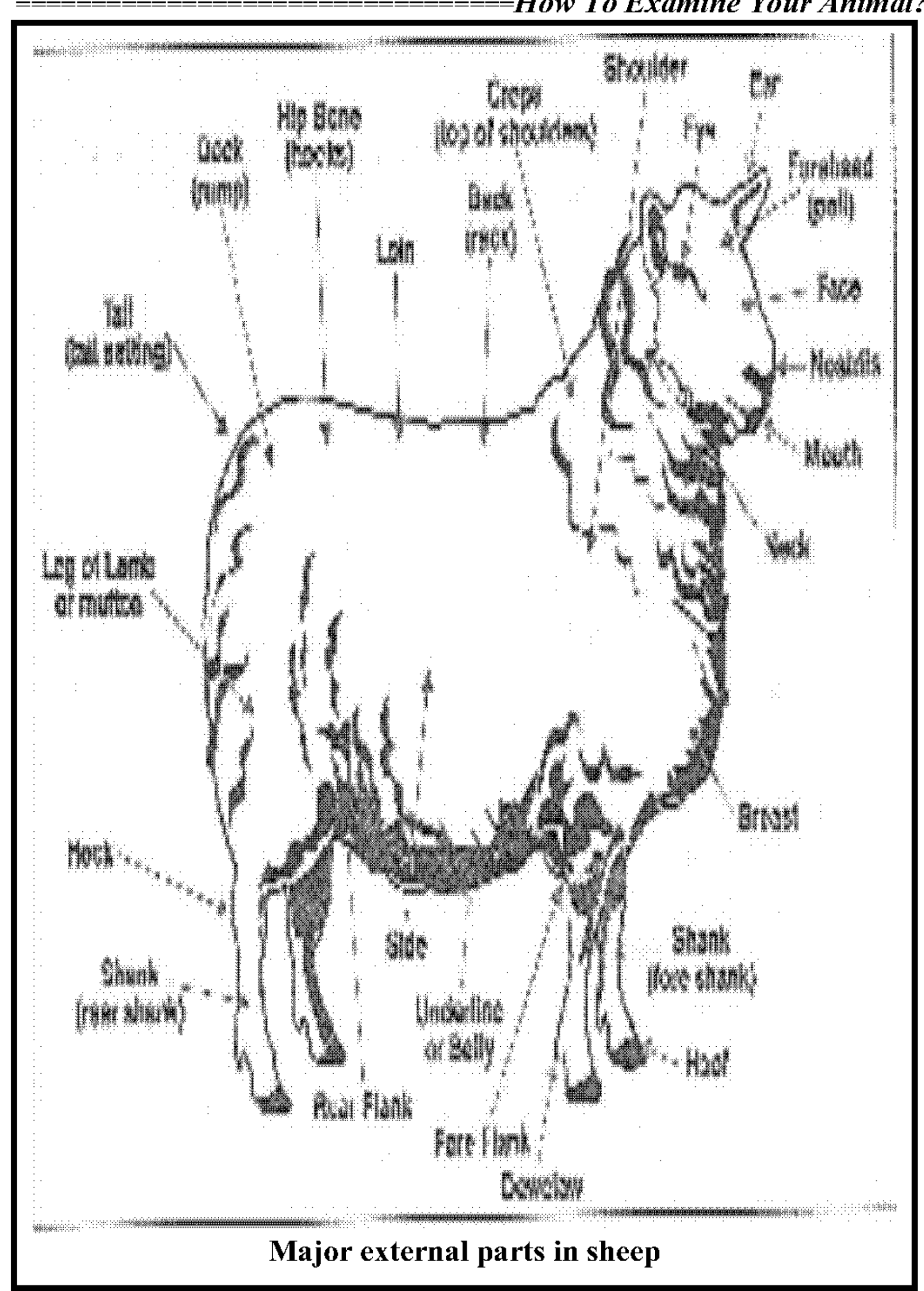
B-Urinary Bladder: *Urinary bladder can not be palpated except in case of distention with urine as in case of urine retention.

C-Urethra: ***In female***: The external urethral orifice can be examined and probed by urethral catheter by using of dilating vaginal speculum with light source.

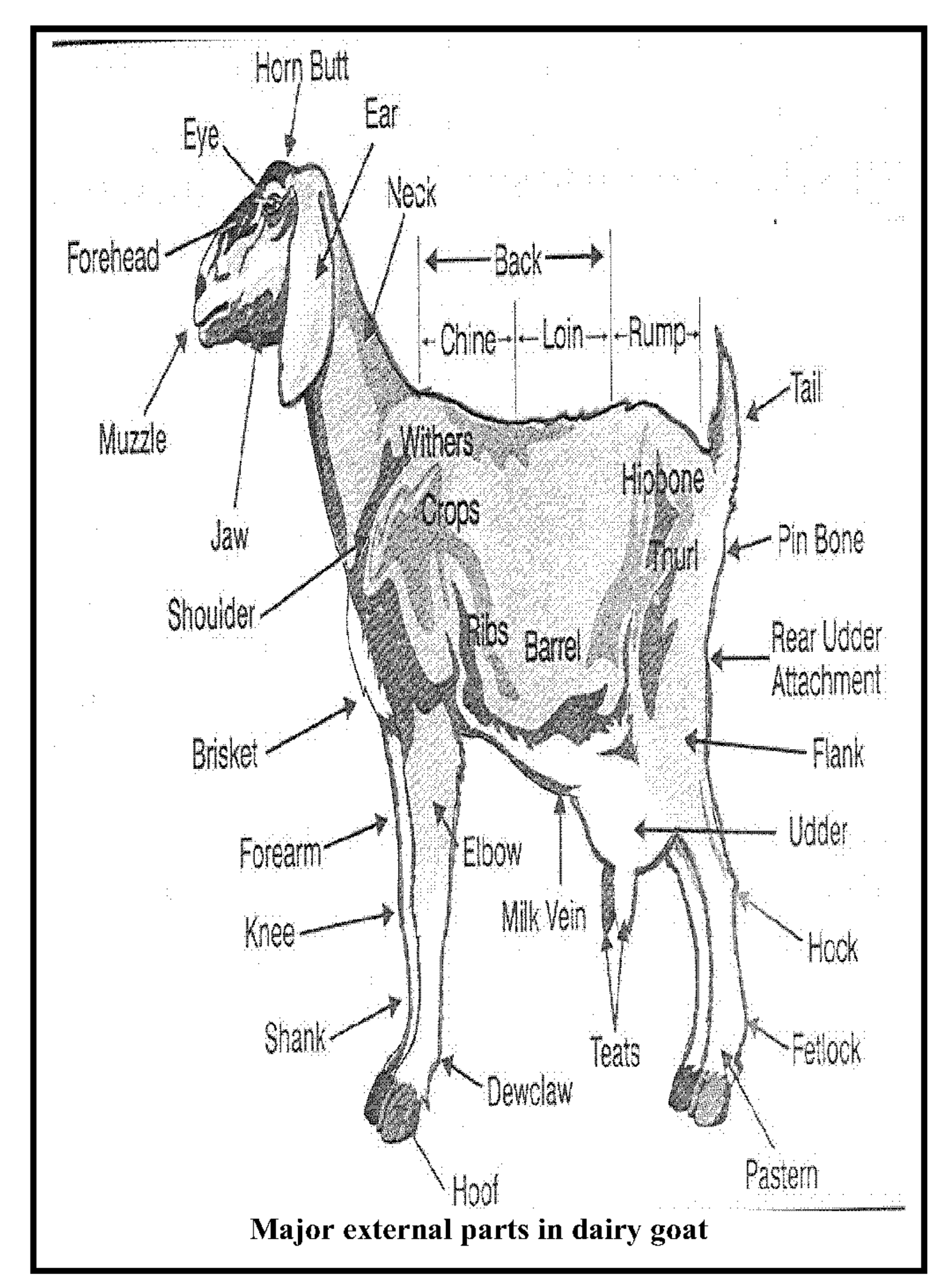
In male: Characterized by presence of what so called urethral process 2-5cm. and it can be examined to detect the presence of calculi as in case of urolithiasis as the urethral process is one of the most predilection site of urolithiasis in sheep and goat.



Urine retention in ram



Major external parts in sheep



Major external parts in dairy goat

Normal Respiratory Rates

Animal	Range
Cattle (adult)	8-16/min.
Cattle (yearling)	15-30/min.
Sheep and goats	20-30/min.
Dog and cat	15-20/min.
Horse	15-30/min.

Normal Temperature Ranges in different animals:-

Animal	Range	Average
Horse	37.2-38 C°	37.6 C°
Foal	37.5-38.6 C°	38.0 C°
Cattle, over 1 hr	37.8-39.2 C°	38.5 C°
Calf, up to 1 yr	38.6-39.8 C°	39.2 C°
Sheep	38.9 - 40.0 C°	39.5 C°
Goat	38.6 - 40.2 C°	39.4 C°
Dog Large breed	*37.5-38.6* C°	38.2 C°
Dog small breed	*38.6-39.2* C°	38.8 C°
Cat	*37.5-39.2* C°	38.1 C°

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Normal Pulse Rate (Beats/Minute)in different animals:-

Animal	Range
Horse	28-40
Neonatal foals	100
Foals, 1 month old	70
Foals, 6 months old to 1 yr.	45-60
Cattle	40-80
Calf (young)	100-120
Sheep and goat	70-90
Dog	70-90
Cat	90-110

References

*Andrews, A.H. (1990).Outline of clinical diagnosis in cattle. 1st. edition.

*Anderson, R.S. and Edney, AT.B. (1991).Practical aniamal handling 1st.edition

*Crow SE, Walshaw SO: _Manual of Clinical Procedures in the Dog and Cat_. JB Lippincott Company, Philadelphia, 1987 (1st Edition), (1997) 2nd Edition.

*George, H. Muller; Robert, W. Kirk; and Danny, W. Scott(1983). Small Animal Dermatology 3rd. edition.

*Horn buckle, WE: General physical examination of the cat and dog. In Handbook of Small Animal Practice, 2nd Edition, (Ed) RV Morgan, Churchill-Livingston, New York, p. 3-11, 1992 and 3rd Edition - 1997, pp. 3-9. (Call Number SF 991 H228 1992 and SF 991 H228 1997)

*Harding, RA: General physical examination of the Canine Patient. Vet Clin N Am (Small Animal Practice) 11(3):453-467, 1981.

*Jasper, S.Lee (2000).Introduction to livestock and companion animals 2nd. Edition.

*Kelly, W.R. (1984). Veterinary Clinical Diagnosis. 3rd. edition.

*Margaret Melling and Martin Alder (1998). Sheep and goat practice 2.

*Peter Rossdale (1989). Horses′ health simplified.

*Pinsent, P.J.N. (1990).Outline of clinical diagnosis in the horse 1St. Edition.

* PROCEDURES OF ANIMAL CARE.A MANUAL FOR ANIMAL CARE TECHNICIANS (2002)-

*Stein, BS: Physical examination of the cat. Vet Clin N Am (Small Animal Practice) 11(3):469-480, 1981.

*Schaer, M: The Medical History, Physical Examination and Physical Restraint. In *The Cat, Diseases and Clinical Management.* 2nd Edition, Ed. Robert Sherding, Churchill Livingstone, NY., 1994, pp. 7-23.

*Radostits OM, Mayhew IGJ, and Houston DM: *Veterinary Clinical Examination and Diagnosis.* WB Saunders, Philadelphia, PA. 1st edition. 2000.

*Richard, B. Ford (1988).Clinical signs and diagnosis in small animal practice. 1st. edition.

*Steven,E Ceow and Sally, O. Walshaw (1991).Manual of clinical procedures in the dog, cat and rabbite 2nd. Edition.

*Pasquini, Atlas of Ruminant Anatomy (1982).

*Smith MC, Sherman DM, Goat Medicine (1994).

*Victor, C. Speors, (197). Clinical Examination Of Horse

Appendix Of Symptoms

Symptoms	Pet-animal	Equine	Small Ruminants	Large Ruminants
1-Loss of body weight (Emaciation)	*D.M. -D.T. -Renal Insufficiency *Dwarfism -Sever enteritis -Parasitism (internal or external) -Gastritis *Liver diseases -Problems of prehension , mastication or swallwoing *Inbalance between supplementation and demands of the animals	*Chronic diseases of heart, liver and kidney *COPD -Sever enteritis or diarrhoea *Parasitism internal or external *Malnutrition or deficiency *Persistent sever pain as in laminitis *Conditions interfere with swallwoing or mastication as in dysphagia	*Periodentitis -Foot rot -Impaction *Pastuerllosis -pulmonary adenomatosis *Ruminal parakeratosis -Scrapie *Johne's diseases -Sever enteritis *Chronic infectious diseases *Malnutrition and deficeicny *Caseous lympnadentitis	*Ketosis -Parasitism (internal or external) *TB. -Sever enteritis -Liver diseases *Selenium deficiency (in new born) *Copper and vitamin A deficiency *Starvation or lack of water *Causes of dehydration and anemia
2-Abdominal Pain (Colic)	*Constipation -Enteritis -Gastritis *Enteritis - Gastric ulcer -Anal saculitis *Intestinal accidentes -Pancreatitis *Hepatitis -Peritonitis -Gastric tempany *Painful conditions in the urogenital tract as in cyctitis or urolithiasis or renal colic	*Intestinal obestruction -Peritonitis *Gastric dialtation -Retained meconium *Renal colic -Ruptured bladder *Sever enteritis -Drinking of cold water after excercis -Froeign body in the GIT *Gastric tempany - Cecal impaction	*Urolithiasis -Impacation -Tempany *Abomasal ulcers - Hepatitis *Urogenital tract infections *Coccidiosis -Peritonitis -Colibacillosis *Abomasal ulcer -Sever enteritis	*Impaction -Tempany -Hepatitis *Cystitis -traumatic reticultis -Abomasitis *Abomasal or omasal impaction *Urolithiasis .Parturation *Acute inflammatroy conditions in genital tract as in vagainitis or pyometria.
3-Cough	*T.B -Pulmonary neoplasm -Sever bronchitis *Bacterial pnuemonia -Parastic pneumonia *Tracheal collaps -Laryngeal paralysis *Tonsilitis -Pharyngitis -Rhinitis	*Strangles .COPD - Rhinitis - Bronchitis *Equien influenza -Parasitic pneumonia *Allergic pulmonary diseases *Parasitic bronchitis (Dictyocaulus arnfeldi)	*Pneumonia (Bacterial or viral or parasitic) *Bronchitis -Goiter *Ckoke -Nasal bot *Pastuerlosis -Pulmonary adenomatosis	*Traumatic pericarditis *Pneumonia -Ckoke *Calf diphetheria -IBR *Malignant catharral fever(MCF)

	-Tracheaitis *Allergy -Emaciated animal with heart diseases *Congestive heart faluir *Knnel cough	*Guttural pouh diseases		*Shipping fever -Pulmonary edema, abscess and emphysema
4-Nasal discharge and sneezing	*Upper respiratory tract infections *Nasal trauma -Rhinitis -Bronchitis - Epistaxis *Bronchopnuemonia -Cleft palate - *Oronasal fistula -Nasal parasites *Some heart diseases *Inhalation of irritant smook *Allergic conditions	*Strangles -Equine influenza -Rhinitis *Rhinopneumonitis -Chronic pulmonary diseases *Guttural pouch diseases -Sinusitis *Inhalation of irritant smook *All cases of dysphagia	*Orf -Rhinitis -Sheep pox *Estrous ovis -Sinusitis -Pneumonia *Pulmonary edema *Photosensitization -Choke *Pastuerelosis	*Calf diphetheria -MCF *IBR -Rhinitis *Cattle plague *Shipping fever -Pulmonary edema, abscess *Pulmonary abscess *Heart diseases *Pulmonary edema
5-Dyspnoea	*Upper respiratory tract obestruction -Tonsilitis *Rhinitis –Pneumonia - Pulmonary odema *Pneumothorax -Larngeal abnormalites *Tacheal diseses as trachaetitis or tracheal collaps	*Diaphragmatic hernia -Pleurisy - COPD *Pneumonia -TB. - Acute anaphylactic shock *Glanders - Strangles *Upper respiratory tract obestruction	*Choke -Impacation -Tempany *Orf -Caseous lympnadenitis -Bronchitis *Tetanus -Hypomagnesemia *Heart diseases -Pharyngitis -Botulism *Goiter -Rhinitis or sinusitis	*Choke -Abomasal displacemnt *Downer cow syndrome (usually) *Botulism -IBR -MCF *Traumatic pericarditis - Calf diphetheria *Congestive heart failure -Tetanus
6-Excessive salivation (Sialosisi)	*Palatochesis -Chelochesis -Tonsilitis *Gastritis -Stomatitis -Rabies -Poisoning *Problems of swallowing (dysphagia)	*Organophosphorous poisoning -Lead poisoning *Diseases or lesions related to the oral cavity as teeth abnormalities, stomatitis *Causes of dysphagia as choke	*FMD -Orf -Organophosphorous poisoning *Hypomagnesemia -Stomatitis *Problems of mastication or prehension *Impaction -Tempany -Tetanus -Blue tongue *Periodental diseases -Dysphagia	*Tetanus -FMD -Rabies -Blue tongue *Organophoshorous poisoning -Impaction *Ricketes -Calf diphetheris -Rinder pest *Actimomycosis -Tempany -stomatitis *Esophegeal or pharyngeal diseases

7-Diarrhoea	*Enteritis -Gastroenteritis -Parasitc infection *Sudden change in diet -Food poisoning *Parvo, Corona, Rota or adenovirus infections *E-Coli infection -Salemonellosis -Renal failure *Hypoadrenocorticism (Adison syndrome) *Acute pancreatitis	*Antharx -Salmonellosis -Over feeding of cereales *Organophosphorous poisoning -Enteritis *Colisteridial infection -Peritonitis -Fungal infection *Prolonged use of oral antibiotic or sulphonamide *Liver disease *Prolonged use of phenylbutazon *Superperguation -Hyperlipemia *Internal parasites as ascariasis or strongylosis	*Colibacillosis -Coccidiosis *Enteritis -Vitamine A deficiency *Colostridial infections -Fascioliasis *Heart diseases -Copper deficiency *Dietary scour due to sudden change in diet *Intestinal parasitic infestations *Copper toxicity *Organophosphorous poisoning	*Coccidiosis -salmonellosis -Collibacilosis *Fascioliasis -Dietary scour -Aflatoxicosis *Copper and vitamin A deficieciny *Lead,mercury or nitrate poisoning *Sodium chlorid poisoning *Congestive heart failure *Some cases of impaction -Enteritis *Organophosphouros poisoning *Parasitic gastroenteritis
8- Conistipation	*Anal sac diseases -Pelvic fructure *Malnutrition -Hypokalemia -Hypercalcemia *Hyperparathyrodism -Late stage of pregnancy *Lacke of water or fibers In the diet *Intestinal obstruction -Rectal prolapse	*Caecal impaction -Intestinal obstruction *Tetanus -lack of fibers *Over feeding of cereal grains	*Impaction -Hypomagensemia -Lack of water *Pregnancy toxemia -Ruminal atony *Tetanus	*Ketosis -Hepatitis -Impaction *Ruminal atony -Lackof water *Indigestion -abomasal displacemnte *Traumatic reticulitis
9-Vomition	*Phyrngitis -Renal diseases -Tonsilitis *Diabetus in late stage -Hepatic diseases *Pancreatitis -Enteritits -Peritonitis *Stress -Pregnancy -Intestinal obstruction *Plant poisoninf or food poisoning	*Injection of high amount of fluids by stomach tube *Untreated colic or accumulation of gases in GIT *Late stage of gastric dilatation	*Rare in ruminants *Administration of large amount of fluid intraruminal *Ovrfeeding specially in newborn animals	*As in small ruminants

10-Abnormal posture or gait	*Rickets -CNS affections -Dwarfism *-Gigantism -Canine hipodysplasia -Tetanus *Rabies -Osteomalicia - Vitamines deficiency	*Tetanus -Lead poisoning -Ckoke -Fructures *Deformity in the muscles -Myoglobinurea (azoturia) -Laminitis -Gastric dilatation *Hypocalcemia -Strongylosis (colic)	*Hypomagensemia -Tetanus -Laminitis *Foot rot -Arthiritis -FMD -Dullness due to fever -Pregnancy toxemia -Copper or vitamine E or selenium Def.	*Ricketes -Osteomalicia -ketosis *Tetanus -Traumatic pericarditis -Colic *Impaction or tempany *Arthiritis -laminitis -Hypomagnesemia *Downer cow syndrome *-Abomasal displacment
11-Dysphagia	*Megaesophegus -Pharyngeal diseases *Oral affections -Goiter *Tetanus -Rabies -Esophegitis *Palatochesis or oral cleft or cleft palat	*Tetanus -Hyperlipemia in pones(due to myositis) *Botulism - Lead poisoning *Roaring disease -Strangles -Glanders *Choke -Guttural pouch diseases *Lips, teeth or mouth diseases	*Choke -Rabies -Hypomagensemia *Phyrngitis -Esophegitis *Caseous lympnadenitis *Goiter in young animal -Bottle jaw	*Actinomycosis -tetanus *Esophegeal or pharyngeal diseases *Three day sickness or fever *Choke -Hypomagensemic tetany
12-Anorexia	*Febrile conditions -Gastritis *Gastroenteritis -Tonsilitis *Pneumonia -Chronic cough *Uremia -Heart diseases	*Sever colic and pain -Uremia *Azoturia or myoglobinuria *Gastric dilatation -Heart diseases *Caecal or intestinal impaction -Colitis-X *Febrile conditions and hyperthermia	*Ruminal parakeratosis -Abomasal ulcer *Periodentitis and stomatitis - Impacation *Tempany -Febrile conditions *Photosensitization -Hypothermia	*Abomasal displacment *Impaction *Tempany *Ketosis -Peritonitis *Tramatic pericarditis -Pneumonia *Calf diphetheria -Febrile conditions *Vagus indigestion
13-Pica	*Rabies -Stomatitis *Malnutrition	*Colic -Pain *Malnutrition and deficiency	*Calcium or phosphorous deficiency *Stomatitis -Rabies	*Nacl or common salt deficiency *Copper deficiency

	and deficiency *Starvation or lack of water	*starvation and lack of water or food	*Starvation	-Lack of water *Hypophosphatemia -Rabies *Ketosis -Lack of roughage *Vitamine D deficiecny
14-Enlarged L.N.	*Tonsilitis -Laryngitis -Mastitis *Orchitis -Blood parasites *Lymphadenitis or abscess of lymph node	*Glander -Strangles -Equine influenza *Blood parasites -Lymphadenitis - Lymphosarcoma	*Caseous lympnadenitis -Blood parasites *Lymphadenitis -Mastitis	*Ephemoral fever -Mastitis *Actinobacillosis -Edamatous skin disease *Blood parasites
15-Tremors and convulsions	*Rabies -Tetanus -Epilepsy *Fever -Hypothermia -Hyperthermia *Strychnine poisoning *Newly born infections of the puppes	*CNS diseases -Tetanus *Strychnine poisoning -Colic (sever) *Myoglobinuria (azoturia) *Hyperlipemia due to myositis	*Pregnancy toxemia *Hypocalcemia -Hypomagnesemia *CNS diseases (arthirits encephalitis virus) *Tetanus -Fever *Hypothermia (in newborn)	*Tetanus -Hypomagnesemic tetany *Ketosis (nervous form) *Hypothermia -Hyperthermia and fever *Organophosphorous poisoning *CNS diseases(cow mad disease) *Milk fever -Meningitis or encephalitis
16-Itching,pruiritis and itching	*Dermatitis -Scabies *Food allergy -Psychogenic alopecia *Flea infestation -collar dermatitis *Solar dermatitis	*Food and soap allergy -Saddle irritation *Drug allergy -Flies,or mites infestations *Dermatitis -Mange -Lack of grooming	*Mange -Dermatitis *Ectoparasites -Photosensitization *Ring worm -Some nutritional deficiency	*Mage -External parasites *Milk allergy -Dermatitis *Ring worm
17-Lack of rumination			*Ruminitis -Tempany -Impacation *Ruminal parakeratosis -Fever	*Ketosis(digestive form) -BVD *Peritonitis -Toxemia

			*Toxemia -Pregnancy toxemia *Heart diseases	*Simple indigestion -Impacation *Tempany -abomasal displacmente *Vagus indigestion -Traumatic pericarditis *Poisoning conditions and heart diseases
18-Dysuria & anuria	*Urolithiasis -Feline urogenital syndrome (FUS) *Cystitis -Urethritis -Prostatitis -Nephritis *Cystic calculi -Urtheral obstruction or trauma *Urtheral prolapse -Bladder trauma *Cystic neoplasm	*Paralytic bladder -Urolithiasis -Cystitis *Sever dehydration -Urtheral obstruction *Urtheral wound	*Urolithiasis -Cystitis *Vaginitis	*Pylonephritis -Sever dehydration *Acute tubular necrosis *Renal abscess -Urolithiasis
19-Abdominal Distension	*Hernia -Ascitis -Hair ball *Blader distension -Pregnancy *Adipose tissue -Odema	*Intestinal obestruction -Urine retention *Ceacal impaction -Gastric dilatation *Retained meconium in newborn foal *Pyometria -Peritonitis -Hernia -Tempany	*Urine retention -Impaction -Tempany *Ascitis -Tumour -Abscess -Hernia *Late stage or pregnancy	*Impaction -Tempany -Hernia *Edema -Abomasal displacmente *Mastitis -Pregnancy -Delayed parturation *Pyometria
20-Abnormal prehension and	*Dental caries -Tonsilitis -Palatochesis *Cleft palat -Rabies -Tetanus	*Stomatitis -Cleft palat -Strangles -Glander *Teeth abonrmalities -Glossitis	*Pox -Orf -Tetanus -Hypomagnesemia *Periodental diseases -Broken mouth	*Sotmatitis -Tetanus -Hypomagnesmia *Zinc deficiency due to ulcer in the gum

mastication	*Stomatitis -Glossitis - Gengivitis *Sinusitis .CNS diseases	-Gengivitis *Tetanus -Myoglobinuria -CNS diseases *Guttural pouch diseases - Dislocation of the jaw	*Strychnine poisoning -FMD	*FMD -Cattel plague -Actinomycosis *Actinobacillosis -Sinusitis -Cow made disease.
21-Tensmus **& Straining**	*Gastritis -Sever enteritis -anal saculitis *Urogental acute inflammations *Urolithiasis -Feline urogenital syndrome (FUS) *Parturation or dystocia *Constipation	*Cystitis-Urolithiasis -Gastritis -Gastric dilatation *Intestinal obestruction -Urine retention *Retained meconium in foal -Vaginitis *Metritis -Dystocia -Constipation -Tetanus	*Urolithiasis -Cystitis -Vaginitis *Sever enteritis *Constipation -Impaction -Hypomagnesemia *Coccidiosis	*Cystitis -Sever enteritis -Urolithiasis *Abortion -Dystocia *Retained placenta - Vaginitis *Pylonephritis -Sever impaction*Tempany *Coccidiosis -salmonellosis -Collibacilosis
22-Alopecia	*Bacterial floculitis -Nutritional disorders *Allergic Conditions *Parasitic infestation *Dermatitis -Mange *Ring worm *Cushon syndrome	*Mange -Genetic *Hormonal disturbances *Malnutrition *Mange and ring worm	*Mange -Iodine deficiency *Copper and vitamin A deficiency *Ring worm -Photosensitization	*Mange -Ring worm *Copper Deficeincy *Skin form of MCF Heavy infestation by internal or external parasites -Malnutrition